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JOURNAL *of* FARM ECONOMICS

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JOURNAL OF FARM ECONOMICS

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RESEARCH IN LAND DEVELOPMENT AND LAND SETTLEMENT IN THE ALLUVIAL VALLEY OF THE LOWER MISSISSIPPI RIVER

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IN AN earlier paper, *Land Economic Research in the Alluvial Valley of the Lower Mississippi River*, published in *This Journal* (Vol. XXIX, No. 3, August, 1947) the flood control, drainage, and land-clearing phases of land-economic investigations in the flood plain of the Lower Mississippi River were outlined. The studies envisioned in this earlier report have now been completed,¹ and land economic research in the Lower Missis-

* Cooperating with Mississippi Agricultural Experiment Station.

¹ Cf. *Land Reclamation by Drainage in the South Central Area*, Bureau of Agricultural Economics. "The Place of the French-Speaking Farmers of Southern Louisiana in the Future Land Development and Reclamation Projects," *Journal of Land and Public Utility Economics*, Vol. XXII, No. 3. "Land Reclamation in Arkansas Under the Swamp Land Grant of 1850," *Arkansas Historical Quarterly*, Winter, 1947. *Drainage Reclamations in the Bartholomew, Beouf, Tensas Basin of Arkansas and Louisiana*, Arkansas Agricultural Experiment Station, Bulletin 470, April, 1948. "Socio-Economic History of Cypress Creek Drainage District," *Arkansas Historical Quarterly*, Spring, 1948. "Past and Prospective Drainage Reclamations in the Coastal Marshland of the Mississippi River Delta," *Journal of Land and Public Utility Economics*, Vol. XXXIII, No. 3. "Drainage Reclamations in the Coastal Marshlands of Louisiana," *Louisiana Historical Quarterly*, Vol. 30, No. 2. "Louisiana's State Sponsored Drainage Program," *The Southern Economic Journal*, Vol. XIV, No. 4. *Swamp Land Reclamations in Louisiana, 1849-1897*, Bureau of Agricultural Economics and Agricultural Economics Department, Louisiana State University. *Methods and Cost of Clearing Land in Northeast Arkansas*, Arkansas Agricultural Experiment Station, Bulletin 495. "Levee Building in Mississippi Before the Civil War," *Journal of Mississippi History*, Vol. VII, No. 2. *Vicksburg and Greenville Flood Control Convention, 1890 and 1891*, Delta Branch Experiment Station, Stoneville, Mississippi. "Flood Control in the Yazoo-Mississippi Delta," *The Southern Economic Journal*, Vol. XVII, No. 2. *Levee Districts and Levee Building in Mississippi*, Delta Council, and Mississippi Agricultural Experiment Station, 1951. *Drainage Reclamations in the Yazoo-Mississippi Delta*, Mississippi Agricultural Experiment Station (at printer).

Land economic research in the Alluvial Valley of the Lower Mississippi River will be summarized in a report entitled: "Land Development and Land Settlement in the Mississippi Valley," planned for publication in 1952.

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Mississippi Valley has been turned to questions more directly related to the settlement of the "Delta," as the Mississippi flood plain is often called, and to the economic and soil processes in land development and the rise of a successful agriculture. It was the purpose of the first paper, and the research which followed, to explore the anatomy of land reclamation in its primary function of flood control, drainage, and land clearing. It is the purpose of this paper to suggest lines of research which will lead to an understanding of the settlement experience and the origin and development of the principal economic and social forces shaping the "new-ground" economy of the Mississippi Valley. The influence of the physical setting and the primary reclamation problem upon settlement and development of the Valley were briefly discussed in the earlier paper and will be enlarged upon here.

Timeliness of Research in Land Development and Land Settlement

Since the passage of the Federal Flood Control Act of May 15, 1928, millions of acres of Mississippi River alluvial land have been given a high degree of protection from overflow. Furthermore, development of the flood control work now in the planning stage is expected to provide protection (except in rare great floods) for the large areas now damaged by backwater where the Mississippi levees are left open to admit major tributary streams, as the Arkansas, Yazoo, and Red Rivers. The development of new, and enlargement of old, drainage systems, particularly in the lower delta also will add substantial areas of new agricultural land.

Of the 30-odd million acres in the Alluvial Valley of the Mississippi, less than half have been developed for agriculture. Of the undeveloped land, about six million acres probably can be economically developed for agriculture on the basis of current estimates. This appraisal takes into account the extensive alluvial areas suitable for rice production as evidenced by the rapid post-World War II expansion of the rice acreage in the cut-over bottoms of White and Cache Rivers in Northeast Arkansas, and, more recently, in the "buckshot" soils of the Yazoo-Mississippi Delta.

In addition to the land which can be developed for crops and pasture, it appears that at least five million acres, including 1,897,000 acres of batture, land on the exposed side of the Mississippi River flood control levees, could be profitably utilized in a hardwood forest program for the bottom lands. With current and prospective prices and costs and recent experiments which prove that cottonwoods have a rapid growth rate, there is a good possibility for developing a successful forest industry on the cut-over lands of the Delta.

The need for cotton, sugar, and rice—the chief commercial crops of the Lower Mississippi Valley—has been substantially increased by the defense mobilization and foreign aid programs. The long-range outlook

for forest products suggests a great need for development of suitable areas, particularly for growing hardwood varieties. Such factors, coupled with the substantial (and continuing) upswing in our own population during the 1940's, makes it clear, in the author's opinion, that the need for agricultural land will continue and that the fertile soils of the Alluvial Valley, which are relatively free from erosion and well suited to mechanized farming, will be at a premium on the land market. Furthermore, the severely eroded soils of the hill areas adjacent to the Mississippi Alluvial plain continue to support (at a very low level of living) thousands of farm families who should be assisted in movement to areas of more productive soil.

The problems of land development and land settlement found in the Mississippi Alluvial Valley are in some respects similar to those found in many semi-tropical and tropical areas throughout the world. In such areas, land development and settlement opportunities must usually be created by concerted action; opportunities for agriculture not thus aided do not appear to exist to any appreciable extent in the undeveloped land. This means that government-sponsored reclamation programs (or possibly corporate development) will need to precede settlement, or at least be carried out simultaneously with land settlement and private land developments. The formidable land development and land settlement experience in the Mississippi Valley should be helpful in the development of many backward areas where technical assistance programs are now being organized. The Mississippi Alluvial Valley is, indeed, a veritable laboratory for the study of techniques in flood control, drainage and land clearing, and for the study of land settlements which have accompanied the various types of land reclamation attempted.

The Physical Setting

Land settlements throughout history usually have been made with a lack of knowledge (sometimes in almost complete ignorance) of the physical and economic problems with which the colony would be forced to deal. Sometimes this has led to fatal results. More often, however, the ingenuity of the settlers was, given time and experience, sufficient to meet the demands of the situation, knowing with hindsight that their lack of knowledge had led them into a precarious position and that constant efforts would be required to preserve the community and develop an economic life. It is thus that Venice and New Orleans and a great many other places are at once a testimony to ignorance and to ingenuity.²

² Visitors to New Orleans should never neglect a visit to the huge pumping stations required to remove the enormous quantities of surface water which accumulates in the sewers and canals of the city during the torrential rains which sweep across the Mississippi Delta.

One of the aims of land economic research in the Lower Mississippi Valley is to determine the kinds of data needed in the establishment of a successful land development and "new ground" settlement program in alluvial areas of high rainfall.³ The development and settlement of agricultural land is a very complex undertaking. Only in rare instances are comprehensive surveys available at the time needed. Usually, it is necessary to proceed on the basis of fragmental surveys. Successful plans can be formulated on the basis of preliminary surveys provided these surveys cover the essential elements. It is probable that a reasonably accurate judgment of the kind and degree of the data needed in the development of tropical deltas can be obtained from the study of the varied experience in such areas as the Lower Mississippi Valley. Here, land development has been under way for more than 200 years under separate governments and a great variety of public and private sponsors.

Research under way shows that a considerable number of the land development failures in the Lower Mississippi Valley can be traced to lack of knowledge of the physical problems of reclaiming Delta land, or to faulty appraisal of the cost of providing primary needs, including flood control and drainage. There are numerous examples of projects planned with a lack of knowledge of the essential character of the Valley and of the requirements of successful land development and settlement programs. Included are the pump-reclamation projects designed to reclaim the coastal marshlands; the gravity drainage program attempted in southeast Arkansas by land-sale promoters from Chicago; the Italian settlements throughout the Delta; the "new-ground" communities of farmers from the Hills begun in the 1930's in the Yazoo and Tensas basins; and certain homestead projects initiated by the Federal government in the 30's.

It should not be inferred that any of the above projects were undertaken hastily and without consideration of the available data which seemed to bear on their success. In some cases, considerable planning was undertaken in advance of the development program. In the case of the marshland projects, for example, very substantial research was done to determine run-off rates, stream flow, soil compaction problems, levee design, and pumping plant capacity required per unit of marshland reclaimed. Unfortunately, little or no attention was given to methods of protecting these projects from tropical storms and tidal waves, or to provision for disposal of pumped drainage water in a manner which would do as little damage as possible to the important muskrat industry of the coastal marshlands. On the economic side, little effort was made

³ It should be recalled that some alluvial areas do not have a high rainfall. The Nile River, for example, forms its delta in an arid region. Thus, development problems here are quite different than along the Lower Mississippi which flows into an area of semi-tropic climate, with a 60-inch annual precipitation.

to develop crops on the reclaimed land for which there was a strong local demand or an export market.⁴

In southeast Arkansas, a somewhat similar case exists in the developments which surrounded the organization of Cypress Creek Drainage District. A very comprehensive drainage survey was made of the basin of Cypress Creek and methods of draining this basin when the Cypress Creek Gap in the Mississippi River levee was closed. The drainage and stream diversion plan proposed by engineers of the U. S. Department of Agriculture was excellent, but subsequent experience revealed a problem not adequately foreseen. This was a provision for safe passage of drainage waters brought into the northern laterals of the Cypress Creek District by districts organized *later* in the extensive alluvial bottoms below Pine Bluff, Arkansas.

In the marshland projects and in the many gravity drainage districts built throughout the Mississippi River bottoms, experience suggests that a general over-all knowledge of the character of the Alluvial Valley would have proved much more useful than many of the detailed local studies which were made. With a general knowledge of the essential characteristics of the Alluvial Valley, land developers would have been in a position to know what detailed studies were most needed. As it was, technicians were busy on detailed soils maps and drainage lateral profiles at a time when the projects were about to be lost to tidal waves or flooded from the headwaters streams, not to mention the danger of general overflow from breaks in the Mississippi levee.

It is no exaggeration to say that a general knowledge of the behavior of the Mississippi River and the flood control works designed to partially confine the annual rises would have saved reclamation interests many millions of dollars and settlers much suffering. Lands have been settled which were not protected from floods. Backwater has overflowed drainage districts which were improperly located and poorly designed to prevent flooding from this source. Seepage from the river during high water has ruined crops on homestead projects located too close to the berm of the levee. Crevasse waters have destroyed crops and livestock which might have been moved to safety if officials and area residents had known what to expect of the river. Settlement continues in certain of the floodway areas without proper appreciation of the risks involved. These are only a few of many ways in which the Mississippi River influences daily living and how it may be the decisive factor in success or failure of land development and settlement plans.

Knowledge of the river is not only valuable as a guide to what is practical in new developments, but it also bears directly on the maintenance

⁴ Robert W. Harrison and Walter M. Kollmorgen, "Drainage Reclamations in the Coastal Marshland of Louisiana," *Louisiana Historical Quarterly*, Vol. 30, No. 2.

and improvement of the established agriculture. In this connection, the problem of increased revetment to prevent excessive bank caving, and the need for extensive setbacks and for a general enlargement of the controlling levees lies at the very heart of the flood protection problem. These are highly-important needs for the prosperous plantation economy which occupies the natural levee lands along both banks of the Mississippi from Cape Girardeau to New Orleans.

As an explanation of reclamation failures in the Lower Mississippi Valley, it is frequently said that until very recently, topographic and hydrographic data on a basin-wide scale was not available, and in the absence of general knowledge of the Valley, local plans were often unrealistic. This is no doubt true, but the point is that the generalized surveys could have been made at the time if the full need for them had then been recognized. In hindsight, it is now clear that the scientific personnel were busy on matters that proved to be of secondary importance.

In the Lower Mississippi Valley, it has taken a great many years to develop a proper appreciation of the need to treat the entire Valley as a unit where water problems are concerned. The development of a comprehensive plan for flood control is the work of relatively recent years, following a long period of State and local management of levee affairs. Drainage organizations remain almost entirely on a local basis, and generally about in the same position that flood control districts were 100 years ago when small groups were attempting to control the Mississippi by building low dikes with mule-drawn scrapers. Gradually, methods are being devised for consolidation of more than 600 separate drainage organizations which control the elaborate network of canals and laterals required for the removal of surface water. The successful cooperative relationship between the levee boards, representing local interests, and the Mississippi River Commission as a Federal coordinating agency, suggests a somewhat similar arrangement for treatment of the drainage problem. In working out these very important details of the land development program in the Mississippi Valley, land economists should have much to contribute of value for river basin developments now being planned throughout the world.

Timetable of Land Development in the Mississippi Alluvial Valley

Land developments cannot be looked on, or successfully studied, as isolated phenomena. Where development and settlement of land have been carried out as part of a plan for "escape" from society, failure, economic as well as social, has usually followed. On the other hand, land developments growing out of the demand for new crops, or additional quantities of established staples, or making room for new settlers in an enlarging

community, are more likely to survive and become a vital part of society. In other words, land development is most likely to be successful when it is a logical extension of the established community and rooted in a real need for additional agricultural production. This does not mean that there need be a geographical proximity with the parent community. This is illustrated by the French settlements in Louisiana. New Orleans and the adjacent developments did not prosper under French administration as France was principally concerned with Continental matters. Prosperity did not come to the Mississippi Delta until the Spanish governors wove the Louisiana colony into their vast network of world trade. During the Spanish period, New Orleans flourished, as is evidenced among other things by the predominantly Spanish architecture of this French-speaking city. Thousands of acres of sugar land were drained and developed under the stimulus of the Spanish trade.

Another example of the inter-dependence of new land developments with the established community is found in the pattern of rice land development. Early experiments with this crop were begun in the Mississippi Valley at Stuttgart, Arkansas, in the dissected alluvial plain by farmers from the Grain Belt. Later, rice farmers from the Stuttgart area developed rice farms in the coastal marshlands of Louisiana, and still later, in the alluvial bottoms of White and Cache Rivers in north-east Arkansas.

A continuous flow of information and personnel tied these developments together. As new machinery was developed for use in grain farming, the Stuttgart rice farmers learned of it from relatives and soon redesigned or adapted it to their conditions. Development here was a chain process with technical data and trained personnel passing from one location to the next.

By a study of the socio-economic setting in which land development takes place, agricultural economists should be in a position to appraise more realistically any plans for development of new areas. The Lower Mississippi Valley offers an unusual number of opportunities to study land developments undertaken under a variety of economic conditions and by several ethnic groups. In a number of instances, the failure of agricultural groups to make attempts at new land reclamation when the physical and economic opportunity appeared to exist, is as instructive as the positive programs initiated elsewhere. A good example was the failure of the French-speaking farmers of southern Louisiana to make economic use of the coastal marshlands of southeast Louisiana which were later developed by farmers from the Corn Belt and Lake States. Failure to make use of these lands at a time when they could have been acquired very cheaply and were badly needed to relieve population pressure in the crowded bayou settlements, reveals the importance of

having the right socio-cultural combination as well as the appropriate potential physical and economic setting when undertaking land developments.⁵

The cultural settings which land development investigations in the Mississippi Valley might well include are: (1) The colonial settlements, including the commercial (sugar) economy of the Creoles and the subsistence economy of the Acadians; (2) the rise of the cotton empire in the Alluvial Valley, covering the developments undertaken by plantation interests before and after the Civil War, and those following the Boll Weevil devastation (around 1910) and the subsequent northward movement of the plantation economy into the undeveloped lands of Northeast Arkansas and Southeast Missouri;⁶ (3) the decline of the lumber industry and the attempts of lumber companies to promote the sale of cut-over land for the development of agriculture; and (4) the rise of the rice economy with resultant new land developments and community developments.

Land clearings throughout the history of the Valley have moved in cycles, stimulated by the development of new crops, the arrival of new settlers, and by changing prices and cost relationships and land values. In the 1930's, land clearings in the Mississippi Valley were being made, for the most part, by displaced tenant farmers and unemployed forest-workers seeking a homestead and a subsistence living. The "new-ground" farmer of the 1930's was conspicuously lacking in capital. Hand methods of clearing were then in universal use. In the 1950's, it is the man with capital who is doing most of the clearing of land. Hand methods have given way to mechanical methods of clearing on all large scale projects.

In this setting, researchers should be able to isolate those circumstances in which land developments are most likely to succeed and practicable rural settlements established. A knowledge of the danger signals in land development and settlement undertakings would be a logical by-product of this research.

Types of Land Settlement Experience in the Mississippi Valley

Few areas offer so great a variety of land settlement experience as the Mississippi Alluvial Valley. Each successive generation has set its own goals and laid its own plans for development of the Mississippi flood plain. France and Spain saw it as the potential heart of a great commercial empire. The ante-bellum cotton planters found it the almost ideal setting for their plantation systems. Disbanded soldiers from Union

⁵ Walter M. Kollmorgen and Robert W. Harrison, "French Speaking Farmers of Southern Louisiana," *Economic Geography*, July, 1946, pp. 153-160.

⁶ The attempts of English-speaking interests to develop cotton plantations in the Mississippi Alluvial Valley after the Civil War also are instructive.

and Confederate armies sought government aid in developing farms here. Later, farmers from the Lake States and the Corn Belt initiated a reclamation movement in the tidal areas and in the swamps of the great interior basins, notably the St. Francis, the Tensas, and the great Yazoo Basin. During the depression of the 1930's, the Delta was spotlighted as the home of thousands of "new-ground" farmers who flocked from the hills of Mississippi, Arkansas, Tennessee, Missouri, and Kentucky to settle on alluvial land forfeited for county and drainage taxes or on cut-over land offered for sale by lumber companies. Since World War II, the emphasis in Delta agriculture has been on mechanization of production. Cotton, rice, and cane are increasingly handled by machinery. Large scale land clearings are being made by local plantation owners and by investors from outside the Valley, currently principally from Texas.

Settlers with different national origins and different cultural backgrounds naturally brought to the Mississippi a wide variety of ideas about how to settle on the land and what kind of agricultural life to develop. If the settlers themselves brought varied experiences to bear on this problem, so did the land reclamation promoters. Often there was conflict between the promoter-managers and the colonists. Out of these clashes of interests grew some of the unusual characteristics of Delta agriculture.

Today, the agriculture of the Mississippi Alluvial Valley presents many striking contrasts. Although rich in soil and water, rural poverty remains commonplace in the Delta. As the site of one of the oldest commercial agricultures in North America, the Valley is yet characterized by vast areas of undeveloped land and by many communities where life retains a frontier character. Famed as a center of plantation culture, the Delta attracts recurrent waves of homeseekers, who expect to develop family-type farms somewhere along the margin of the swamps. A land of opportunity, the Delta nevertheless is currently losing population and the number of farms is declining, while total cropland acreage is gaining.

One of the major goals of land economic research in the Lower Mississippi Valley is an analysis of the varied settlement experience there. Some of the settlement patterns, as the ribbon-cane farms of the Acadians, have been previously studied in some detail, but many significant settlement plans have been overlooked. These include attempts to develop alluvial land through the importation of foreign labor, largely Italian and Oriental; the development of agricultural communities by lumber companies; the colonies organized by promoters for the major railroads of the Valley; and settlement by farmers from the hills on State tax land and on private lands under sale-contracts.

Investigations under way cover the role of such agencies as drainage and levee districts in land settlement, and the work of the Southern

Alluvial Land Association and similar agencies in promoting emigrant settlement. State immigration services also were responsible for settlements in many parts of the Alluvial Valley. The colonies established by the Federal Government in the Delta fall within the scope of such research. Some of the current community problems in the newer rice areas merit investigation. The recent clearings of hundreds of acres of new land in northeast Arkansas and the development of numerous new homes has put a heavy burden on the county road and school funds, as well as upon such utilities as electric and telephone services.

From the land settlement experience in the Delta, it is hoped that some positive guides can be developed for use in future land development in the Lower Mississippi Valley and in similar areas elsewhere. Mistakes made as far back as colonial times have been repeated time and time again in developing Delta communities. It is possible to take much of the hardship out of new land development and the development of facilities for rural living in new land area. Tested machines are now available for most of the land clearing and draining operations. Flood control has become the responsibility of specialized agencies. It remains for land developers to profit by the lessons of past settlements and set their goals toward those types of land development which have considerable promise of success. It takes more than dreams and hard work to build a successful new ground settlement. Research should help reveal just what it does take. Toward this end, development and land settlement studies in the Mississippi Valley are directed.

Dynamics of Land Development

As noted earlier, land developments usually take place in a complex economic and social setting. The land selection and use-intensification aspects of land development have an important bearing on the rural community and are in turn influenced by the surrounding society. The returns from land developments to private and public capital rise and fall in response to a complex set of factors in which the rate of new developments is in itself an important contributor. An understanding of these aspects of land development and the establishment of new settlements should aid public agencies materially in making constructive and efficient contributions to the economy of the "new-ground" farmers.

Agriculturists have made only a comparatively few studies which bear directly upon the detailed organization of efforts required in such undertakings as those involved in Alluvial Valley land development. For example, little is known of the sources of capital, the local manufacture of specialized clearing machinery, the recruitment of skilled workers and operators, and the methods of management in the new rice land clearings which are taking place in the northeastern Delta area of Arkansas. If the

successes of the Arkansas rice clearings are to be duplicated elsewhere, a great deal more must be known than at present about how the technical aspects of the development are handled. It does not "just happen" that skilled tree-saw operators are available for contact. The presence of competent local machinists able to design new machines and redesign old ones for specialized clearing tasks cannot be taken for granted. It is imperative that economists know something of the "climate" in which these technical services and management abilities develop, if large scale land developments are to be successfully undertaken by private enterprise or semi-private efforts in undeveloped areas throughout the world. Toward this end, current research includes a study of the organization of effort which has accompanied the several types of land development undertaken in the Valley. Tracing individual efforts, including the background of training and experience, from their origin to the accomplishment of highly specialized tasks is instructive. So is the analysis, as far as possible, of the socio-economic aspects of individual technical and management efforts.

With the possible exception of flood control, publicly organized services in the Mississippi Valley to date do not appear to have served the interest of land developers as well as have the private or quasi-public services. For example, the land drainage organizations have been particularly slow in bringing the benefit of their services to areas of new land development. There is an obvious need for concerted action on the part of all public utilities (whether privately or publicly managed) if new land areas are to grow into successful communities. There is an astonishing lack of uniformity in the level of services available to "new-ground" farmers.

New settlements have great difficulty shaking off the habits and patterns of the traditional agriculture from which they developed. The stereotypes of southern agriculture cast long shadows across the reclaimed lands of the Mississippi Valley. Even as late as the 1940's, the Farm Security Administration found it difficult to persuade its clients to abandon the "40 acres and a mule" concept in the development of family-sized cotton farms. Thus, the institutional aspects in the factors of production are of particular importance in appraising the potentialities of any "new-ground" community. Where the traditional forms are clearly inadequate, strenuous efforts must be made to bring in new concepts and new methods. This can usually be done, but it is too important a part of land development and settlement to be left to chance. It is impossible to mention here all the points at which institutionalized concepts are likely to detract from the success of "new-ground" developments, but some of the more important points can be outlined.

Economic research in "new-ground" areas in the Mississippi Valley

has repeatedly shown that such institutional aspects of land use as unwillingness to abandon traditional crops and the cash crop complex, are particularly hard to avoid in developing new settlements where they often lead to failure of projects otherwise promising. An illustration of this is found in the coastal-marshland projects in the Mississippi Delta where emigrants from the Corn Belt tried to maintain the traditional corn and hay crop rotations. Obviously, more intensive crops were needed if the high cost of pumping drainage water was to be successfully met. Similarly, the unwillingness of many southern farmers to develop livestock enterprises has impeded the use of many reclaimed, clay soils of the interstream areas throughout the Alluvial Valley.

The land-ownership pattern, insofar as it reflects a traditional arrangement, gives many clues about what to expect in changing to the new patterns frequently required if extensive undeveloped lands are to be reclaimed for crop production. Much land not now used for agriculture is unsuited for successful reclamation. The transfer of land from situations of extensive use to more intensive use is often very difficult to effect. This is particularly true when the original owner hopes to profit substantially from the erection of public or quasi-public reclamation facilities such as flood control levees, drainage ditches, irrigation works, tidal barriers, etc. In the Mississippi Valley, the development of the extensive backwater areas may be impeded by the extensive tracts in which they are held and the relative concentration of government reclamation benefits.

The sources as well as the methods of using labor become institutionalized, particularly when there are racial differences to be considered. The management function also easily falls into stereotyped patterns. If new developments are to be fruitful, such management problems must be overcome.

The sources of funds for financing agricultural enterprises, too, have become highly standardized. In few cases are funds for new developments adequately available. Numerous other phases of the dynamics of land development could be mentioned. It is important that there be a more general appreciation of this part of the land development and land settlement problem.

Impact of Technology and Social Objectives on Development of New Land

Throughout the history of agriculture, the development of new land has been a laborious process. Usually, several generations have been required to remove the forest and prepare the land for cultivation. In all but the most-favored areas of the United States, the accumulation of capital has been slow, with many failures and setbacks. In those cases

where development was undertaken by land companies or plantation interests, labor was frequently exploited. As late as the 1940's, it was common to hear in the Lower Mississippi Valley of lands being cleared under sales contracts and returned to the original owner several times as family after family cleared a portion of it, but failed to meet the set payments and eventually lost their labor through forfeiture of the contract. Occasionally, isolated tracts would be successfully cleared under sale contract and a new enterprise launched, but thousands of acres settled in the late 1930's and early 1940's by prospective owner-operators have been lost. Plantations flourish where settlements of small farmers existed a few years before. In some instances, government-sponsored homestead projects suffered a similar fate.

The development of machinery for use in land clearing and the enlargement of the engineering functions in flood control and drainage put the question of land development in a new economic and social setting. The establishment of minimum wages and the extension of social security tend to reduce the supply of labor formerly utilized in the land clearing system. It is reasonable to expect that technological and sociological advances will be increasingly brought to bear upon land development in the Mississippi Alluvial Valley. It is one of the aims of land economic research in this area to appraise new methods of land development and new settlement plans as they arise. The vast expenditures of the Federal Government in Mississippi Valley flood control make it certain that land use and land development in this area will receive increasing attention from students of the national economy. Conservation of resources, community development programs, health programs, and numerous grant-in-aid plans have a direct bearing upon the scope and nature of land development throughout the Alluvial Valley.

In the Delta of the Mississippi we have one of our last land frontiers. The tools and the ideas required to bring this Valley to a high state of agricultural and community development are now in the last stage of testing. Their full use should make possible an unprecedented expansion of the physical and social frontier, not to mention substantial improvements in the established agriculture. National interest in the Lower Mississippi Valley is as old as our government itself. Progress in the reclamation of this great flood plain has been continuous despite the mistakes which have been made. The synthesis of modern technology and social objectives as worked out in this area will be eagerly watched throughout the world. In many ways this is a pilot project.

ORGANIZATION FOR POLICY PLANNING IN THE U. S. DEPARTMENT OF AGRICULTURE

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THE U. S. Department of Agriculture has probably had a more varied experience of planning than has any other agency of government with the exception of the military. It has—to illustrate with only a few examples—been the socialist manager of some 73 million acres of forest land for many years; it has carried on what was, until the recent war, the largest public program of scientific research; it has participated directly in the making of more than a million “farm and home plans” and an even larger number of production control and conservation farm plans, and it has set annual production goals by states and counties for scores of commodities. (In fact, it is to a significant degree through the planning activities of the Department that nearly six million farm firms and households are integrated into something that is often called an industry.)

These and other planning undertakings of the most diverse kinds have yielded a great deal of experience that should be valuable to the student of planning. It is not the purpose of this paper to review this diversity, however, or even to note the high points of it. The purpose here is to describe and evaluate the organizational arrangements that have been made within the Department for the formulation of long-term departmental programs. This excludes from consideration all types of farm planning, all operational planning, all bureau planning (except as a bureau may have been the vehicle of departmental planning), and all war production planning.¹ It focuses on the organization of planning to “solve” the “farm problem” or to contribute to the making of a long-term national agricultural policy.

Throughout most of the article, the word “planning” is used to mean those activities which have been called planning by the U. S. Department of Agriculture. A review of these activities reveals that they have frequently had little connection with the process by which important decisions have actually been reached. Indeed, a study of real policy formation might involve only slightly the so-called planning bodies discussed in this paper.

¹ War planning was done by the War Food Administration. See Bella Gold, *Wartime Economic Planning in Agriculture*, Columbia University Press, 1949. For other aspects of Department planning see Norman M. Pearson, “The Budgeting Function in the Department of Agriculture,” *Public Administration Review*, 3:1, Winter 1943, pp. 24-41, and Robert A. Walker, “The Relation of Budgeting to Program Planning,” *Public Administration Review*, 4:2, Spring 1944, pp. 97-107.

Study of USDA planning leads to the further conclusion that some of what has been called planning may be regarded as a "protective ideology" which served to conceal the Department's failure to engage in more systematic study of the larger, longer-term policy issues. This failure is attributed in part to the fact that it became plain about 1936 that the Farm Bloc would not support programs to bring about basic adjustments. Other reasons for absence of long-range planning were the fractionalized structure of the Department and lack of organization for effective planning.² An examination of some suggestions for improvement of the planning organization leads to the conclusion that fundamental changes must occur in our political system before the policy-making process is greatly influenced by planning.

I

It was late in 1933, with the establishment of the Program Planning Division of the Agricultural Adjustment Administration, that the Department of Agriculture first undertook to plan a national agricultural program.³ The AAA was the product of 15 years of agrarian thought, but it could hardly be called a plan. It was, in fact, a hodgepodge of authorities for doing what the farm organizations thought expedient in the emergency. Its predecessor, the Federal Farm Board, had some planning functions, but the Board was not in the Department and it was too much occupied with the problems of the day to look ahead.

The Program Planning Division was, however, not without antecedents in the Department. For one thing, the idea of production planning and control had a history. The Department had been issuing "outlook" reports since 1923 in the hope that it might thus guide the production of several million farms somewhat in harmony with demand. Howard R. Tolley, who became chief of the Program Planning Division and an assistant administrator of AAA, was a pioneer in this outlook work. When it was clear that the outlooks could not do what was needed, Tolley suggested the creation of state, regional, and national planning councils with au-

² In the latter part of this paper, where suggestions are made for the improvement of the organization of planning, the term "planning" is defined as those activities by which a specialized unit of an organization prepares a conception of the needs and purposes of a social unit and describes the means by which they may best be achieved.

³ Secretary of Agriculture David F. Houston wrote in his annual report in 1913, "We have unmistakably reached the point where we must think and plan." (Quoted by John M. Gaus and L. O. Wolcott in *Public Administration and the United States Department of Agriculture*, Public Administration Service, Chicago, 1940). Previously, as Gaus and Wolcott say (p. 32), the Department was "essentially a collection of research workers with attaches for informational and publication services." Secretary Houston's resolution to think and plan did not change matters, but planning might be dated from the organization of the Bureau of Agricultural Economics in 1922. (See Gaus and Wolcott, p. 53).

thority to zone land and map types-of-farming areas. His idea was to have the Extension Service persuade farmers to make the adjustments called for in the plans.⁴ Earlier, W. J. Spillman, the Department's authority on farm management, had made recommendations along the same lines.⁵

This was one antecedent of the Program Planning Division. Others were the land policy studies of Professor Richard T. Ely at Wisconsin and of his students who in the 1920's had found places in the Department—O. E. Baker, who was making an atlas of American agriculture and formulating land classification categories for the Census, and L. C. Gray, who was engaged in studies of tenure and settlement in relation to land utilization. By 1923 the work of these men had matured (as can be seen from their article in the *Yearbook* of that year) to the point where it provided the basis for a general revision of land policy. Meanwhile, the conservation and the city planning movements had been growing and establishing lines of communication with each other and with other antecedents of the planning movement, notably the scientific management movement. In 1927, the Committee on the Bases of a Sound Land Policy, the chairman of which was Frederic A. Delano, brought together specialists from agriculture, engineering, city planning, and land economics. Two years later it issued a report—*What About the Year 2000?*⁶—which stressed the need for a comprehensive land use policy. This led to the mapping of types-of-farming areas in connection with the 1930 census and to the National Conference on Land Utilization called in 1931 by the Secretary of Agriculture and the land grant colleges. This report also led to the creation of the National Land-Use Planning Committee, an organization of officials (to which an advisory committee of farm organization representatives was attached) which, without statutory authority, funds, or staff, interested itself in problems of submarginal areas, grazing resources, land classification, and land use in the Tennessee Valley. This committee eventually was merged into the National Resources Board.

There was this background of thought and experience for the Program Planning Division to draw on, and there were organization resources as well. "There was a firm foundation on which to build," Rexford G. Tugwell noted. "This consisted not only in accumulated relevant knowledge, but also in a central staff and a far-reaching field reporting system capable of finding out anything policy makers needed to know about agriculture."⁶

⁴ See Howard R. Tolley's articles, "The History and Objectives of Outlook Work," *This Journal* 13:4, October, 1931, and "Regional Planning for Agriculture," in E. A. Duddy (ed.), *Economic Policy for American Agriculture*, Chicago, 1932.

⁵ In *Balancing the Farm Output*, New York, 1927.

⁶ "A Planner's View of Agriculture's Future," *This Journal*, February, 1949.

There was also, of course, the highly developed, although virtually autonomous, system of State Experiment Stations and Extension Services. These could, if they would, provide communication between the planners and the farmers. On the other hand, neither in the state colleges nor elsewhere—Secretary Wallace complained—were there technicians who were trained to think as planners.⁷

The most important difference between 1933 and what had gone before, however, was that now, for the first time, the Department had authority to put plans into effect. While the Program Planning Division was being organized, AAA actually entered into production control contracts with 1,925,000 cotton, wheat, corn-hog, and tobacco farmers. The next year it organized nearly 4,000 County Agricultural Control Associations with some 3,000,000 members. AAA could do much more than make benefit payments under production control contracts; it could also issue marketing orders and agreements, conduct relief, diversion and surplus removal operations, make commodity loans, allot quotas for the importation of sugar, and even buy land and make rehabilitation loans and grants.⁸

In the short run, during the emergency, AAA would have to use these controls as expediency required. But the Program Planning Division was to take a long view. It was, Tolley explained, "concerned with developing a long-time plan for agriculture and pointing emergency adjustment activities toward that plan. It seeks to relate the various activities of the AAA and of other government agencies whose functions affect agriculture into a unified attack on farm problems. It aims to develop production and adjustment programs instituted to meet emergency situations into a long-time plan for establishing farming on a satisfactory economic basis. The underlying objective is to raise rural standards of living."⁹

The Program Planning Division's internal organization seemed commensurate with this task. Tolley, its chief, was one of three assistant administrators of the AAA; under him were an associate director (Mordecai Ezekiel) and an assistant director. The division included six sections—land

⁷ Wallace said in 1936 that the "state college" people "found it easy to think in terms of analysis but they did not function at all well in terms of synthesis. They had no practice. There has been little opportunity for planners in this country. There is, generally speaking, no such thing as planning economists." H. A. Wallace, *Democracy Reborn*, New York, 1944, p. 101.

⁸ For a detailed treatment of the early AAA, see E. G. Nourse, J. S. Davis, and J. D. Black, *Three Years of the Agricultural Adjustment Administration*, The Brookings Institution, Washington, 1937. Later AAA controls are described in T. W. Schultz, *Agriculture in an Unstable Economy*, McGraw-Hill, New York, 1945, pp. 163-185. For an account of the projected AAA land utilization program, see L. C. Gray, "Planning the Use of Natural Resources," *Proceedings of the Annual Convention of Association of Land Grant Colleges and Universities*, 48 (1934), published in 1935, pp. 100-102.

⁹ H. R. Tolley, "Program Planning Division of the Agricultural Adjustment Administration," *This Journal*, 16:4, October, 1934, p. 582.

policy, production planning, import and export, agricultural and industrial relations, replacement crops, and rehabilitation. In September, 1934, it had 48 professional workers in Washington and 47 in the field. The section with the largest staff was that on land policy.¹⁰

Formally, of course, the Program Planning Division was the staff agency of a single bureau—one bureau among many, and Tolley reported not to the Secretary of Agriculture but to the bureau head. But in practice, the case was quite different. While the old Department went about its pre-New Deal routines, the multitudinous authorities of the AAA Act were being used to create what was in effect a new Department of "action programs." The Program Planning Division was the central planning agency of this Department, and since it was with this new Department that Secretary Wallace and his top assistants were almost entirely concerned, the Division was really a staff aid to them.

As the basis of its long-term plan, the division went to the Bureau of Home Economics for a "nutritional yardstick" by which to measure production requirements under optimum conditions.¹¹ Then, to chart the adjustments which should be made in production, it reviewed the data that the Bureau of Agricultural Economics (BAE) had for several years been accumulating. In the summer of 1934, the Program Planning Division cooperated with Iowa State College and other land grant institutions in experimental studies of adjustment problems. These studies were carried much further in 1935 when several hundred workers spent six months mapping about 700 types-of-farming areas in all states. With the information from this survey, the planners intended to recommend systems of farming for each type-of-farming area, systems to check soil depletion and encourage the adoption of practices which would lower the costs of production.¹²

"If the adjustment programs had been continued," Nourse, Davis and Black wrote, "this type of project would in all probability have been extended until some pretty definite outlines of a planned agricultural production program, broken down by area units, would have been evolved. Into this plan could have been fitted production quotas for individual producers."¹³

No plan of this kind was worked, however, because on January 6, 1936,

¹⁰ *Ibid.*, p. 589.

¹¹ See Russell Lord, *The Wallaces of Iowa*, New York, 1947, pp. 386-87.

¹² This work was begun in a "Seminar on Agricultural Planning" at Iowa State College in 1934. An account of it is given in Ranier Schickele, "Economics of Agricultural Land Use Adjustments," *Iowa Agricultural Experiment Station Bulletin* 209, March 1937. For the later developments along these lines see H. R. Tolley, "Regional Adjustment Project: A Summary and Some Suggestions for Further Work," *Proceedings of Annual Convention of Association of Land Grant Colleges and Universities*, 49 (1935), published in 1936, pp. 109-129.

¹³ *Op. cit.*, p. 382.

the Supreme Court declared the first AAA unconstitutional. With the subsequent passage of the Soil Conservation and Domestic Allotment Act and the Agricultural Marketing Agreements Act, AAA moved away from the idea of making a long-term plan for permanent adjustments in agriculture. Instead it followed, in the name of soil conservation, a program of subsidy in which farmers received parity payments without the necessity of changing from undesirable patterns of production.¹⁴ In 1938, after a year of bumper crops, AAA attempted to reduce acreages and store surpluses, but its purpose was to raise prices, not to secure basic adjustments in production. Also in 1938, Congress fixed commodity loan rates, thus establishing firmly the policy of subsidy which would be carried forward into the war. The Program Planning Division was not formally liquidated until 1939, when it was merged into BAE, but it made no long-term plans after 1936. After 1936, Congress and the farm organizations showed no inclination to favor the making of basic adjustments in agriculture.

II

Failure to develop a unified farm program within the AAA led (along with other causes) to a steady proliferation of new agencies. Finding in 1937 that the ramification of land-use activities within the Department was "astounding," Secretary Wallace appointed a Land-Use Coordinator (Milton Eisenhower) and the next year created an Office of Land Use Coordination in the Office of the Secretary.¹⁵ The coordinator's duties did not specifically include planning, but in practice, of course, no sharp separation could be made; during the remainder of Secretary Wallace's tenure the coordinator played an active part in policy formation.

The new agencies also created problems in Federal-States relations. The land grant colleges complained of encroachments on their spheres of

¹⁴ Writing in 1937, Nourse, Davis, and Black said: "The program seems on the whole to take on more definitely the character of financial aid for everybody and less that of specific implementation for a planned system of efficient farming. . . . We are not a little apprehensive as to certain practices of government aid or subsidy which appear to have become entrenched in such a way as to be a barrier to truly planned activity in this field. If real planning is to be forwarded, these barriers will have to be broken down. . . ." *Op. cit.*, p. 385.

¹⁵ Secretary's Memorandum 814, April 6, 1939, quoted in full by Gaus and Wolcott, *op. cit.*, pp. 485-487. In 1937 two field coordinators, one for the southern and one for the northern Great Plains, also were appointed. Their duties (quoted by Gaus and Wolcott, *op. cit.*, p. 154) including examining plans of action developed by bureaus and recommending their approval or disapproval. This effort at field coordination ended in 1943. By Secretary's Memorandum 1120, August 21, 1945, the position of Land Use Coordinator was abolished and its functions and personnel were placed under the immediate direction of the Assistant Secretary having responsibility for the administration of natural resources programs. For an account of these developments and the present arrangements, see *House Hearing on the Agriculture Appropriation Bill for 1950, Part 2*, pp. 8-10.

influence and of being forced to take sides in behalf of the political premises underlying the new programs emanating from Washington.¹⁶ The Department, on its side, felt that the colleges, if they were going to retain the exclusive responsibility for taking education to the farmer, would have to recognize that information about seeds, soils, and fertilizers was no longer sufficient—that the problems of the day also required that the farmer be given education in policy matters. Moreover, the Department leaders—Wallace, M. L. Wilson, and Tolley—believed that action programs and education programs ought to stimulate the growth of “grass-roots democracy.” The need for coordinating the spreading new bureaus and to avoid conflict with the colleges, together with this interest in “grass-roots democracy,” caused the Department to enter into an important new agreement with the colleges. This agreement was signed at Mt. Weather, Virginia, in July, 1938.

The Mt. Weather agreement established a hierarchy of committees to plan and “correlate” land use policies.¹⁷ The base of the organization consisted of community and neighborhood land use planning committees composed of farm people. The work of these local committees was “correlated” by County Land Use Planning Committees. The county committees were made up mostly of farm people and had farmer-chairmen; they included the county agent and representatives of the federal agricultural agencies such as AAA, the Soil Conservation Service, the Farm Security Administration, and so on. The activities of these county committees were “correlated” by state committees. The state committees included some farm people, but they were composed chiefly of Federal officials, with the Director of Extension as chairman.

This arrangement ignored the Farm Bureau and other pressure groups. The Farm Bureau did not like to see the Department (even though it acted through the Extension Service) handpick certain farmers to represent other farmers and then promise to collaborate with these “representatives.” From the Farm Bureau point of view, it was an intolerable procedure, both because it threatened to undermine the Farm Bureau organization and, what was not very different, because it took political issues out of politics. But to Milton Eisenhower and others in the Department, the apolitical approach seemed perfectly appropriate, because, as they believed, men of good will were bound to agree when they viewed the same set of facts together. The Farm Bureau knew that the committees would have to play a political role. The Department leaders protested that they were to serve an educational purpose. This difference

¹⁶ See Iowa State College, Committee on the Faculty, *The Role of the Land Grant College in Governmental Agricultural Programs*, Ames, June, 1938, Bul. V, 38, No. 2.

¹⁷ The Mt. Weather Agreement is quoted in full in Gaus and Wolcott, *op. cit.*, pp. 463-65.

between "politics" and "education," a difference which was partly verbal and partly real, continued until 1941 when the Farm Bureau finally got Congress to destroy the committees.

The Secretary assigned the Department's responsibilities in connection with the committees to the Bureau of Agricultural Economics. At the same time, he made BAE the central planning agency of the Department and named Tolley its chief. The memorandum announcing these changes pointed out that "we must beware of wholly divorcing that [general] planning from actual administration of specific programs" and it stressed the unity of the farm problem. "The problem," the memorandum said, "is to provide for formulation of our broad objectives cooperatively, with all agencies agreeing upon the basic facts, accepting common standards, deciding upon priorities, formulating commonly acceptable judgments. This cannot be realized without some machinery for bringing the right people together at the right time and for considering the right questions."¹⁸ This, of course, was another application of Eisenhower's belief that men of good will are bound to agree when they and the facts are coordinated.

BAE now had sole authority to administer the Department's responsibilities (but not those of the several bureaus) towards the land use planning committees. In this connection its task was, Tolley wrote, to "encourage direct farmer participation in the planning process" and to synthesize "research results, farmers' suggestions, and administrative experience into the form of agricultural plans and programs." As the central planning agency of the Department, BAE was also to develop "an integrated and continuing national agricultural program."¹⁹ The Secretary's memorandum provided that for this purpose, BAE was to have "definite cooperative relationships" with the bureaus. But the memorandum then went on to say that the bureaus were to do their own operational planning and it established an Agricultural Program Board consisting of the bureau chiefs with the Land Use Coordinator as chairman, the function of which was to examine all plans for "administrative feasibility and practicality" before they were submitted to the Secretary for approval.

Under this arrangement, BAE could formulate programs but it had no way to make the action agencies carry them into effect. As Tolley once observed, he was "in the position of pushing with a string." It was no wonder that he decided it would be some time before the BAE would

¹⁸ Secretary's Memorandum of October 6, 1938. Quoted in full by Gaus and Wolcott, *op. cit.*, p. 469. See also *House Hearings on Agriculture Department Appropriations Bill*, 1940, pp. 860-879.

¹⁹ H. R. Tolley, "Contribution of Agricultural Economics to the General Welfare," *This Journal*, 2:1, February, 1939, pp. 17-18.

get around to exercising its central planning function and that working out agreements between farmers and technicians was in itself a large enough task. Tolley's reservations did not, of course, appear on the organization chart; and so BAE was, in the words of Gaus and Wolcott, "at the convergence of vertical lines running to the land, but lines that were crossed at different area levels—regional, state, county, local—by horizontal lines of coordination."²⁰ By 1941, BAE had organized 1,800 county and 10,000 community committees which held nearly 27,000 meetings in that year. In 1942 there were nearly 200,000 men and women participating in the committee work.²¹ The land-use planning program was, Henry Wallace said, "a noble experiment in democracy."²²

In June, 1942, Congress, at the behest of the Farm Bureau, called a halt to the land use planning activities. In retrospect, the accomplishments of the committees seem to have been slight.²³ Under any circumstances it would have been difficult to reconcile the national programs with each other and to fit them to local circumstances, but the task of the committees was especially difficult because the committees were based on what proved to be a mistaken assumption: the sad fact was that men of good will often disagreed when faced with the same facts.²⁴ Moreover, it was evident, if anyone cared to see, that local committees would be no more democratic than were the local folks themselves.²⁵

Congressional prohibition of land use planning did not affect BAE's position as the central planning agency. This already had been affected, however, although not formally, by the departure of Henry Wallace to

²⁰ Gaus and Wolcott, *op. cit.*, p. 312. For a detailed account of the land use planning organization see the *Land Use Planning Organization*, County Planning Series 3, USDA, May, 1940; see also M. S. Eisenhower and Roy I. Kimmel, "Old and New in Agricultural Organization," *Farmers In a Changing World*, pp. 1125-1137; also in the same volume, E. A. Foster and H. A. Vogel, "Cooperative Land Use Planning," pp. 1138-1156.

²¹ H. R. Tolley, *The Farmer Citizen at War*, New York, 1943, pp. 138-139.

²² *Ibid.*, p. 175.

²³ Tolley devotes a chapter of uncritical praise to the committees in his book, *op. cit.*, pp. 134-175. Neal C. Gross, "A Post-Mortem on County Planning," *This Journal*, 25:3, August, 1943, says that BAE's administration of the committees was not democratic enough.

²⁴ This conclusion also is drawn by Charles M. Hardin. See "Reflections on Agricultural Policy Formation in the United States," *The American Political Science Review*, 42:5, October, 1948, p. 889.

²⁵ See John D. Lewis, "Democratic Planning in Agriculture," *The American Political Science Review*, 35:2 and 3, April and June, 1941). Lewis reports "... in Lee County, Alabama, 65 percent of the farmers are Negroes, 72 percent are tenants, 53 percent of the tenants are sharecroppers. There are, of course, no Negroes on the county committee; there are no croppers; there are 'a few' tenants. Seventy-five percent of the land leases are merely verbal agreements, usually for one year. The committee's report contains very little on tenancy problems and no recommendations concerning leases. . . ." April 1941, ff. p. 249.

become Vice-President of the U.S. Claude Wickard had been a student of Tolley's in Indiana, but neither Wickard nor Marvin Jones, who became War Food Administrator in 1943, accorded Tolley the importance he had had under Wallace. Tolley identified himself more and more with C. B. Baldwin and the unpopular Farm Security Administration. Thus it was that after 1941, as war and post-war planning activities moved forward, the head of the central planning agency rarely spoke to the Secretary or the War Food Administrator.

BAE had created an Interbureau Coordinating Committee on Land Use Planning which in 1940 turned its attention to "preparedness" planning.²⁶ In 1941 Secretary Wickard replaced this committee with the Interbureau Coordinating Committee on Post Defense Programs which was to prepare a shelf of rural public works and study economic problems and problems of conservation and resource development.²⁷ The new committee, comprised of representatives of all bureaus, was broken down into 23 working groups along subject matter or problem lines. Nine regional coordinating committees were created; these committees consisted of field officials of the various bureaus with representatives of farm organizations sometimes participating on an informal basis. The work of the field committees and the national working groups was guided by "national activity leaders," in most cases assigned to this work from BAE. "The Department's organization for planning," the National Resources Planning Board reported, "is an interesting development in the technique of integrating and then decentralizing the planning within a far-flung government organization. It is a form of 'grass-roots' planning which will reflect national policy decisions. As such, it is comparable to the decentralized planning techniques practiced by the National Resources Planning Board and more recently by the Office of Defense Health and Welfare Services."²⁸

The regional committees and the national working groups prepared a number of voluminous reports in mimeographed form. During the war there was no possibility of putting the recommendations into effect. The committee therefore turned its attention to education, issuing a number of notable pamphlets under the series titles, *The Farmer and the War* and *What Peace Can Mean to the American Farmer*.

While the Department was doing "post-defense" and "post-war" planning, responsibility for war planning lay elsewhere. Chester C. Davis was appointed agriculture's representative on the National Defense

²⁶ See Walter W. Wilcox, *The Farmer in the Second World War*, Iowa State College Press, Ames, 1947, p. 37.

²⁷ Secretary's Memorandum 913, May 31, 1941 and Supplement No. 1, September 17, 1941.

²⁸ *National Resources Development Report* for 1942, p. 34.

Advisory Commission in May, 1940, and shortly afterward the War Food Administration was created. Congress soon fixed commodity loan rates and price supports of such a nature as to circumscribe the administration's power to encourage production of some crops by discouraging production of others.²⁹ Production goals were established by the War Food Administration, but they were hardly more than mere listings of what farmers were likely to produce under the prevailing circumstances—circumstances by no means consistent with food requirements.³⁰ The field representatives of the action agencies were brought together in county and state defense (later war) boards; these coordinating committees had some administrative responsibilities in connection with rationing, draft deferments, and the breakdown of "goals." A combined Food Board was established, not to fix production requirements, but to allocate the short supply among the claimants. In all of this, neither the Department nor its central planning agency played any part, although a number of constituent bureaus, including BAE, were of great usefulness to the War Food Administration.

Within BAE, although apart from the interbureau committee work, a small group of economists produced in 1945 "A Conversion Program for the Cotton South."³¹ This was an amplification of some suggestions that Secretary Wickard had made to a House of Representatives committee the year before; it called for letting the price of cotton drop to world levels while helping southern farmers reorganize their enterprises to conform with long-term trends. This proposal provoked a number of Congressmen and, with other causes, resulted in abolition of BAE's regional offices and drastic curtailment of its funds and authority. At the end of 1945, Secretary Anderson transferred "responsibility for leadership in general welfare agricultural program planning" and direction of the interbureau committee work from BAE to his own office.³² Meanwhile Tolley resigned.

III

On the last working day of 1946, Secretary Anderson called the Policy and Program Committee to meet in his office. It was to this committee, consisting of bureau chiefs and top administrative officers, that he had transferred the BAE's planning functions the year before. The Secretary

²⁹ Wilcox, *op. cit.*, pp. 40-42.

³⁰ *Ibid.*, pp. 40 and 60-67. See also Bella Gold, *op. cit.*, pp. 106-113.

³¹ Mimeographed Report, 1945.

³² The transfer was perhaps not to Secretary Anderson's own office, Charles M. Hardin has written, so much as it was to the research divisions of the national farm organizations, chiefly the American Farm Bureau Federation. For a study of the political influences playing on BAE in this period, see his "The Bureau of Agricultural Economics Under Fire: A Study in Valuation Conflicts," *This Journal*, 28:3, August, 1946, pp. 635-668. Reference to the conversion program is to be found on page 657.

had hoped, he said, that the Committee would produce some plans, but a year had passed with nothing to show. Farmers needed a blueprint of what was ahead, the Secretary continued—they needed an outlook through 1950 that would give them some indication of what crops to plant and how many livestock to keep. He wanted the Committee to get busy on something of the sort right away. When Assistant Secretary Charles F. Brannan, whose usual duties related to land and water policy, conservation, health, housing, welfare, and minority groups, suggested that the Committee work from the assumption that every person in the United States ought to have a nutritionally adequate diet, the Secretary immediately asked him to take charge of the plan-making and to assign duties to others in the Department as he might think necessary.

Brannan did not explicitly define his assignment as the making of a unified, long-term plan for agriculture. As he saw it, "we need to develop a blueprint of possibilities, looking beyond the immediate transition period, toward what might be accomplished. We need to set up bench marks to measure the potential size of the farmers' long-range assignments—what might be accomplished by 1950, as well as some longer-range objectives. We can then indicate goals so the farmer will know how to plan his acreage, his feeding schedules, and farm organization. After determining the pattern that is desirable, we must consider the steps necessary to achieve the goals."³³

Brannan created an "Integrating Committee" from the membership of the Policy and Program Committee. The bureau chiefs, all of them members of the Integrating Committee, assigned technical specialists from their bureaus and from BAE to 17 subject matter sub-committees covering such fields as forestry, credit, tenure, crop insurance, price supports, and rural electrification. Each sub-committee was asked to prepare a report according to an outline provided by Brannan. The outline called for the following:

1. A brief declaration of policy and statement of objective to be accomplished,
2. A description of how the programs would operate and reference to any historic or experience basis or other supporting information,
3. A statement of relationship between the programs proposed and other programs within or under the jurisdiction of the Department,
4. A description of existing legislative authorities, appropriations and departmental agencies or organizations to perform the task,
5. A statement of the character of additional authority or legislation needed,

³³ "Pattern for Agriculture," Revised Draft, a processed statement by the Assistant Secretary dated January 20, 1947.

6. An appraisal of the relationship of the program to the general economy.

Many of technical specialists serving the Integrating Committee had prepared reports for its predecessor, the Interbureau Coordinating Committee. These men made use of their earlier work to a large extent, and copies of the earlier reports were used by the subject matter committees but, even so, it may be said that a second set of post-war plans was built from the ground up.

In May, 1947, the subject matter sub-committees had completed their assignments. Brannan then appointed five "Policy Development Committees" to integrate the 17 subject matter reports into a few policy statements. The chairmen of these committees were of bureau-chief rank;³⁴ the committee members were drawn from the appropriate subject matter sub-committees. "The objective of the committee assignment," Brannan wrote the chairmen, "is to develop a specific program in sufficiently definite terms to serve as the foundation for the drafting of specific legislation as and when needed, but it will not be necessary for this committee to extend its consideration into the details of administrative implementation at this time."

In addition to the letter of instructions, the chairmen were given a list of questions "intended to stimulate examination in the development of a program rather than solicit specific answers."³⁵ The Program Development Committees had completed their reports by July, 1947. The reports were then revised for style and readability by the USDA information staff and the recommendations they contained were approved by the Secretary. In October, the Secretary, Assistant Secretary, and committee chairmen presented the revised reports in testimony before a joint hearing of the House and Senate committees on agriculture.³⁶ Copies of the testimony were supplied to the USDA Councils (state and county war boards under a post-war name). The Councils were asked to bring the program before farmers at local meetings and to report the farmers' reactions back to Washington.³⁷ Opinion-forming and opinion-testing were thus to go forward together.

The subject matter subcommittees passed out of existence when their

³⁴ One of these chairmen was O. V. Wells, the chief of BAE. Wells found it necessary to assure the appropriations subcommittee that his participation in this work did not mean that BAE was again planning. For his description of BAE's new role, see his testimony in *House Hearings on Agriculture Department Appropriations Bill, 1949*, pp. 360-374.

³⁵ Memorandum by Assistant Secretary Brannan, May 12, 1947.

³⁶ *Long-Range Agricultural Policy*, hearings before a Subcommittee of the Committee on Agriculture and Forestry, U.S. Senate, and the Committee on Agriculture, House of Representatives, 80th Congress, First Session.

³⁷ USDA Council Memorandum No. 37, October 7, 1947.

reports were completed; the Policy and Program Committee, however, was a continuing body. According to the departmental regulations, the functions, of the committee "include the consideration of over-all policies governing the programs of the department, including the functions with respect to planning transferred from the Bureau of Agricultural Economics, the review and evaluation of plans and programs of the constituent agencies. . . ." In addition, the Policy and Program Committee was to review the production goals formulated by the commodity committees under the auspices of the Production and Marketing Administration.³⁸ In practice, however, the committee exercised no policy function; its only task since the formulation of the Long-Range Agricultural Policy proposals, aside from the routine review of production goals, has been to supply the National Security Resources Board with certain materials relating to mobilization planning.

To prepare an agricultural plan for the Missouri Basin to complement the Pick-Sloan Plan, the Secretary established a new working committee of representatives from participating bureaus. The working group, which was under the direction of an Assistant to the Secretary, assigned tasks to the bureaus concerned and based its report on their work.³⁹ The same form of organization is currently being used in the preparation of an agricultural plan for the Columbia River Basin.

In January, 1949, when Secretary Brannan determined to make plans for a new price policy proposal to be presented to Congress in April, the Policy and Program Committee was not consulted. Instead, the Secretary arranged what he called a "seminar or discussion group" of some 20 persons "who have something to contribute to the problem."⁴⁰ Some of these advisers were of bureau chief rank, but more were not. The seminar met, with the Secretary as chairman, two evenings a week for two months. The participants presented and discussed papers on various aspects of price policy. The earlier long-range policy recommendations were not forgotten; a set of these documents was constantly on the conference table. After the seminar had explored the subject to the Secretary's satisfaction, five of its members met with the Secretary in his inner office to draft the detailed proposals that were put before Congress.⁴¹ These pro-

³⁸ USDA Administrative Regulations, Chap. 6, Sect. 2, 2-4-49 (Amend. 14), p. 31.

³⁹ This organization was established by Secretary's Memorandum No. 1220, July 9, 1948. Ralph R. Will, the assistant to the Secretary who was placed in charge, is also in charge of the Department's flood control investigations. As explained in footnote 15, his office is a successor to that of Land Use Coordinator. The plan prepared by the working group appeared as H.D. 373, 81st Congress, First Session. *Missouri River Basin Agricultural Program*.

⁴⁰ *House Hearings on the Agriculture Department Appropriations Bill for 1950*, Part 1, p. 15.

⁴¹ At a joint hearing of the House Committee on Agriculture and the Senate Committee on Agriculture and Forestry, April 7, 1949.

posals were the so-called Brannan Plan. Brannan talked to Chairman Nourse of the Council of Economic Advisers the morning the plan was presented. Nourse also received a copy of the proposal a little over an hour before it was presented to Congress.

IV

It can be seen from this review that in the USDA's experience, planning has meant various things—program coordination, farmer education, public and Congressional relations, grass-roots democracy, Federal-States relations—in addition to program formulation. There is, of course, no reason why the word "planning" should not be defined to include these ends and activities. But it will be useful here for the purposes of analysis and evaluation to define it as the activity by which a specialized unit of an organization (the planning body) prepares a conception (expressed in terms of maps, budgets, and accompanying memoranda) of the needs and purposes of a social unit and of the means, more or less precise, by which these needs and purposes may best be met. There is no scientific way by which social needs may be determined and given priorities; the political process must always be the ultimate basis of every decision. The limited function of planning is to exhibit, as a guide to the participants in the political process, the implications for present decision-making of a comprehensively worked-out set of "ultimate" goals which are assumed.⁴²

Judged by this conception, the Department of Agriculture has in fact (except with the Program Planning Division of AAA) done very little planning. Even today the Department has no permanent and adequate mechanism for long-range planning and, apparently, no feeling of need for one.

"Within the next few years," the Secretary said in his annual report for 1949, "this country will have to face great economic problems, such as the progressive mechanization of Southern agriculture, the development of vast river basins, and orderly marketing of the war-stimulated output of American farms. Vigorous economic and social research is necessary, and along with it, the collection of more nearly adequate statistics." The Secretary's most recent public discussion of departmental reorganization contained no mention of planning.⁴³

The activities that have gone under the name of planning since 1930 may perhaps in some instances be regarded as rationalizations for the

⁴² Whether this conception is appropriate in this context is of course arguable; the conception is developed further in the writer's article, "Congress and the Budget: A Planner's Criticism," *The American Political Science Review*, XLIII:6, December 1949, pp. 1218-28.

⁴³ Statement before the Senate Committee on Expenditures in the Executive Departments, September 11, 1951.

Department's failure to assume responsibility for the formulation of a coherent, long-term program. The USDA's interest in grass-roots democracy, especially, may be characterized as a "protective ideology" which concealed this evasion of responsibility by picturing a special interest group as "democracy."⁴⁴

It is not hard to find reasons why the Department has done so little serious planning. It became fairly clear about 1936 that the Farm Bloc would not support programs intended to make basic adjustments. The farm organizations and Congress gave evidence that their plan was not to have a plan, but instead to provide continuing subsidies which would make fundamental changes unnecessary.

In 1934, Rainier Schickele saw the possibility of outlining a "rational solution of regional and national agricultural problems,"⁴⁵ but by 1937 Nourse, Davis, and Black were writing of the AAA that, "The program seems on the whole to take on more definitely the character of financial aid for everybody and less that of specific implementation for a planned system of efficient farming If real planning is to be forwarded, these barriers will have to be broken down" ⁴⁶ Far from being broken down, the subsidy barriers were built higher and higher. There was no use planning when basic adjustments were out of the question.

The fractionalized structure of the Department of Agriculture also has tended to prevent comprehensive planning. The several bureaus are nearly autonomous, and over large policy areas—soil conservation, credit aid to low-income farmers, agricultural science, forestry and so on—the bureaus preside without much reference to the Department. Each bureau has its own pressure groups on which to depend for support and, accordingly, with which to collaborate on policy.

In such a system there are obvious disadvantages. Bureau planning is partial planning; this is true under the best of circumstances. All bureaus, of course, are ambitious for expansion (or at least for survival). This ambition, together with their relatively exposed position, makes them susceptible to the advice of the pressure groups upon which they particularly depend. This advice is usually conservative. In any case, it is not motivated by a view of the public interest. The pressure groups, moreover, are interested in the short rather than in the long-run. Bureau

⁴⁴ Cf. Philip Selznick, *TVA and the Grass Roots, A Study of the Sociology of Formal Organization*, University of California Press, 1949.

⁴⁵ Schickele wrote that the types-of-farming project "has demonstrated a workable method of approach to the scientific determination of agricultural policy. It has proven the possibility of outlining a rational solution of regional and national agricultural problems and has created a precedent which may encourage the removal of antagonistic and self-interested pressure groups from the formulation of agricultural legislation." *Op. cit.*, p. 410.

⁴⁶ *Op. cit.*, p. 385.

planning, therefore, tends to be focused on the next Congress and to yield results which are without structure, coherence, or logical relation.

Bureau planning tends to avoid controversial matters and to keep the Department from them too. The bureau chief is intent on getting appropriations for activities that have already been authorized, and so he is anxious to avoid "needless" controversy, i.e. controversy inessential to his short-run aims. Moreover, the bureau chief does not have enough weight to raise fundamental questions of policy with Congress; he is likely to be told that his job is to carry out the orders of Congress, not to advise it.⁴⁷ The result is that the bureau head takes the program that has already been authorized pretty much as given. The effect may be to keep some important issues from being raised at all, for, because of bureau autonomy, the Department ordinarily keeps out of the little policy realm over which the bureau chief presides.

Finally, the lack of a planning body, i.e. of a specialized organ in intimate communication with policy-makers and capable of giving continuing, full-time study to the basic issues of policy, has made effective planning quite impossible. Committee meetings with local farmers have their place (and, of course, one may define such meetings as planning if one pleases), but they are no substitute for the fairly technical business of outlining a farm policy which is consistent with some premises regarding the long-term public interest. Neither is an evening seminar in the Secretary's office an adequate substitute.

⁴⁷ As Administrator of the Farm Security Administration, C. B. Baldwin, one of the most energetic and courageous of bureau heads, was virtually autonomous in his special realm. But Baldwin could not face Congressional and public opinion head on in the manner of a cabinet officer, as is shown by the following passage from the *House Hearings on the Agriculture Department Appropriations Bill, 1942*, pp. 105-106:

Mr. Tarver: Is not the provision of legislation which will remedy the farm conditions throughout the country primarily the responsibility of Congress?

Mr. Baldwin: I would think so, sir.

Mr. Tarver: You have no duties with respect to the recommendation to Congress of measures which would be beneficial in remedying any particular feature of the farm problem?

Mr. Baldwin: Well, I would feel a little presumptuous in advancing them, if I had, Judge Tarver, but I do not have any.

Mr. Tarver: Your duty is to administer these funds which are placed within your jurisdiction for certain designated purposes.

Mr. Baldwin: Yes, sir.

Mr. Tarver: And purposes designated by Congress by appropriate legislation, and it is not your duty to suggest to Congress that it ought or ought not to make changes in the laws which are at present in effect in an effort to remedy the general agricultural situation.

Mr. Baldwin: That is right.

Mr. Tarver: That is correct?

Mr. Baldwin: That is right; yes, sir.

Mr. Tarver: That is all, I think.

V

Any suggestions for the organization of planning for the USDA must rest on some notion of the nature of the problems with which agricultural policy must deal. If one supposes, as the Hoover Commission did, that there is nothing wrong with agriculture that more scientific research, conservation, and price supports will not correct, one may perhaps ignore the matter of planning.⁴⁸ Again, if one supposes, as the Department generally has, that farm policy exists for the sake of the farmers (and above all, for the more prosperous commercial farmers in the better land areas), one may be satisfied with any form of planning that will get the farmers what they want from the next Congress. Indeed, taking this view, one might argue, as did a former Secretary not long ago, that "it is not the job of government agency personnel to formulate agricultural policy"—that agricultural policy is strictly a matter to be "developed by farmers through their own farm organizations in cooperation with the members of Congress."⁴⁹ Here it will be assumed (space being lacking for argument) both that there are chronic maladjustments in agriculture⁵⁰ and that it is proper for the executive branch (the bureaucracy) to formulate comprehensive proposals which Congress may or may not accept.

On these assumptions, what concrete suggestions can be made for improvement in the organization of planning in the Department of Agriculture?

What is most needed is the development of a permanent, specialized organ within the office of the Secretary of Agriculture to be concerned with the larger issues of policy in their longer-term aspects.⁵¹ The need,

⁴⁸ The Hoover Commission's report on the department says nothing about planning. It does acknowledge, however (p. 18) that "conditions of imbalance in agricultural production are present in varying degrees. . . ."

⁴⁹ *New York Times*, December 15, 1949.

⁵⁰ The writer accepts the analysis of T. W. Schultz in *Production and Welfare of Agriculture*, Macmillan, 1949. Professor Schultz is not at all responsible for the position taken here, however.

⁵¹ A recent, stimulating article by W. Robert Parks ("Guide-Lines for Agricultural Policy," *This Journal*, XXXIII:2, May 1951, pp. 157-168) points out that pressure politics alone will not give proper weight to the national interest, that what is needed is a process which systematically incorporates an objectively over-all, long-range view, and proposes a planning group of generalists at the secretarial level, having the Secretary's strong support, and close working contacts with the action bureaucracy. With this much of Professor Parks' argument the writer agrees entirely. But Professor Parks continues: since pressure groups cannot be eliminated, they should be brought into face-to-face continuing, organized working relationship with the planners. This, he says, might reconcile some groups to policy proposals before they hit the floor of Congress and it might give the planners a sense of *realpolitik*. The same reasons, Professor Parks says, might justify inclusion of a group of representative Congressmen in the planning process.

With these latter suggestions, which would introduce political struggle and compromise into the early stages of policy projection, the writer altogether disagrees.

of course, is not a new one in government. "This then," wrote Sir Henry Taylor in 1832, "is the great evil and want—that there is not within the pale of our government any adequately numerous body of efficient statesmen, some to be more externally active and answer to the demands of the day, others to be somewhat more retired and meditative in order that they may take thought for the morrow."⁵²

It will not be easy to put these long-term "developmental" planners (the meditative men) in a right relation to the short-run "operational" planners and the administrators (the externally active men). The developmental planners must not be cut off altogether from the problems and affairs of everyday, yet they must not be engaged in the details of administration. They must have intimate connections with the bureaus without being bureau spokesmen. They must be part of a larger developmental planning body in the office of the President, which views all of national life and regards agricultural policy as a part of the larger whole; at the same time, the developmental planners must stand in a staff relation to the Secretary.

These requirements may seem to be in conflict with one another at several points (how, for example, is it possible to be in a bureau but not of it?), but the example of the Bureau of the Budget, which is chiefly concerned with operational planning, suggests that lines of communication can be built in these ways. The gradual growth of a career service for higher administrative positions (such as Professor Leonard D. White has long urged) may facilitate the integration of planners with administrators.

These suggestions are in general similar to those of Paul H. Appleby, a former Under-Secretary of Agriculture and a leading student of public administration, and to the recent example of the Program Planning Staff of the Department of the Interior.

Appleby believes that "the translation of many segmented, special interest policies into sound national policy and the translation of national policy into effective international policy is the supreme public policy problem of today."⁵³ He proposes "staff organisms around department

It is true, as Professor Parks rightly stresses, that the social and political dimensions of a problem are as real as any others and the planner must, of course, make realistic assumptions about social and political as well as other aspects of his problem. But the planner's field is not simply "the art of the possible." It is rather "the art of the most desirable of all possibles." His task is to enlarge the view of the purely "practical" people, and so he becomes useless if too strongly afflicted with a sense of *realpolitik*. Surely to suggest that administrative officials, lobbyists, and Congressmen engage in a formal process of collaboration is to mistake the real function of all three.

⁵² Sir Henry Taylor, *The Statesman*, Cambridge, 1927, pp. 115-116.

⁵³ Paul H. Appleby, "Organizing Around the Head of a Large Department," *Public Administration Review*, 6:3, Summer 1946, p. 208.

heads whose sole reason for being rests in the function of projecting policy and administration into governmental and international terms; behind these, staff agencies adequate to develop bureau policy and administration into departmental terms and into forms sufficiently controllable by the secretary to be capable of the still higher projection."⁵⁴ Appleby's "staff organisms" would constitute a developmental planning body; he would make the head of an (operational) planning agency a member—but not the chairman—of the developmental planning body.

Something of this kind has recently been exemplified in the Interior Department.⁵⁵ In the winter of 1947-48, a Program Staff was established to report directly to the Secretary and the Under-Secretary. The Program Staff, according to the order creating it, "is authorized to examine all policies and programs of the Department with the objective of ascertaining that (a) they are integrated and internally consistent; (b) they constitute a full utilization of the Department's powers for carrying out the responsibilities of the Department; (c) they are appropriately related to the programs and policies of other agencies of the government; and (d) they are in proper context with the current and prospective needs of the national economy."⁵⁶

As a former head of the Program Staff has observed, "For the first time in the history of the department there exists on the departmental level a group whose sole purpose is to translate vague purpose into specific program—program which will consist of precisely stated objectives, related in a meaningful way to accepted national economic goals. . . ."⁵⁷ The Program Staff has its counterparts in regional committees which do in microcosm what it does nationally; thus "there has been institutionalized within the departmental structure a concept of unified programs."⁵⁸ The bureaus of the Department of Interior have already presented a unified regional program for the Northwest to the Bureau of the Budget and to Congress.

Of course, the effectiveness of any planning institutions will depend finally on the breath and depth of the agreement that exist among the interests chiefly concerned in agricultural policy, and on the willingness of interest groups and of Congress to permit a sufficiently large sphere of action in which administration may proceed unhampered by political interference once the ends and the principal means have been agreed

⁵⁴ *Ibid.* p. 208.

⁵⁵ Whether the Program Planning Staff has actually served the purposes described here is a question which need not, and in any case, cannot be gone into here.

⁵⁶ Quoted by Alfred C. Wolfe, "The Blending of Area and Function," *The Public Administration Review*, 9:4, Autumn 1949, p. 285.

⁵⁷ *Ibid.*, p. 285.

⁵⁸ *Ibid.*, p. 286.

upon through the political process. Thus, as D. Gale Johnson points out, if a forward price policy is to be successful, there must exist an administrative agency which "must be considered responsible to the public in general, not to any particular segment of the economy" and "Congress must be willing to formulate workable general principles of price policy and then permit an administrative agency freedom of action within the limits established by the general principles."⁵⁹

These are conditions which are not likely to be met, the political structure and the political morality of America being what they are today. Yet even if the atmosphere is such that comprehensive plans are not likely to be accepted and put into effect, there is nevertheless good reason to engage in developmental planning just the same. The reason is this: The very existence of a developmental planning body and of developmental plans forces consideration of fundamental issues, creates a conception of a public interest, and puts this conception in a position to become itself a factor, even if not a decisive one, in the political struggle.⁶⁰

It will not be easy, however, to persuade a department head to create a mechanism which, far from making easier his daily task of securing the agreement on which action may proceed, may even make it harder. On this, the further testimony of Sir Henry Taylor is of interest. After pointing to the need for meditative minds to take thought for the morrow, Sir Henry added, "I hardly know if that minister has existed in the present generation, who, if such a mind were casually presented to him, would not forego the use of it rather than hazard a debate in the House of Commons upon an additional item in his expenses."⁶¹

⁵⁹ D. Gale Johnson, *Forward Prices for Agriculture*, University of Chicago Press, 1947, pp. viii-ix.

⁶⁰ See Otto H. Nelson, "Administrative Planning for National Defense," in C. J. Friedrich and Edward S. Mason (eds.), *Public Policy*, Graduate School of Public Administration, Cambridge: 1941, p. 424.

⁶¹ *Op. cit.*, pp. 118-119.

FARMER COOPERATIVES AND ECONOMIC WELFARE

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IN RECENT years there has been considerable controversy over the relative desirability of farmer cooperatives as compared with firms operating for private profit, especially in situations in which the two forms of enterprise compete directly. The question has been particularly acute in connection with special tax treatment for farmer cooperatives under the federal corporation income tax. The usual arguments in favor of cooperative action by farmers, such as increased efficiency in marketing, increased income for low income farmers, and anti-monopoly action are not subject to any generalized proof or disproof and are usually argued in terms of the individual's preconceptions.

It is possible, however, to make an objective comparison of the results of the two forms of enterprise in at least one significant area, the probable allocation of resources in relation to economic welfare.¹ This can be done by establishing certain distinctive features of the two forms of business organization and then analyzing the operating results in terms of technical welfare analysis to see whether the cooperative form of organization leads to better distribution of resources from the social point of view. If such analysis should reveal that farmer cooperatives do tend to promote the general economic welfare by either operating at the socially optimum level, or closer to it than do private profit firms, it would offer one basis for arguing that farmer cooperatives should receive some measure of public support, of which special tax treatment might be an example.

I. Effect of Differing Management Policies of Private Profit and Cooperative Enterprise

Attention may first be called to the fact that in cooperatives the interest of the entrepreneur, used in the somewhat specialized sense of anyone who shares in the surplus over necessary cost, differs from that of the entrepreneur in private profit firms.² The source of this difference may be found directly in the difference in the objectives of the two forms of business. One is the fundamental purpose of the cooperative to serve the in-

¹ An interesting analysis in these terms of consumer cooperatives has been made in the article by Stephan Enke, "Consumer Cooperatives and Economic Efficiency," *American Economic Review*, March, 1945, pp. 148-155.

² This meaning for the term "entrepreneur" is necessary in order to include within the definition the patron who is not a member but nevertheless shares in the distribution of the economic profit.

dividual members at the lowest possible cost. The second is that in the case of the private profit firm, the owner is only incidentally a patron of the firm, while in the cooperative the owners and the patrons tend to be the same persons. This means the usual management purpose of obtaining maximum total profit for the firm should be subordinated in the cooperative. In the private profit firm, the entrepreneurs prefer to have total profit maximized because that means that the return to the owners is also maximized. This is not necessarily true in a cooperative. Because the owners

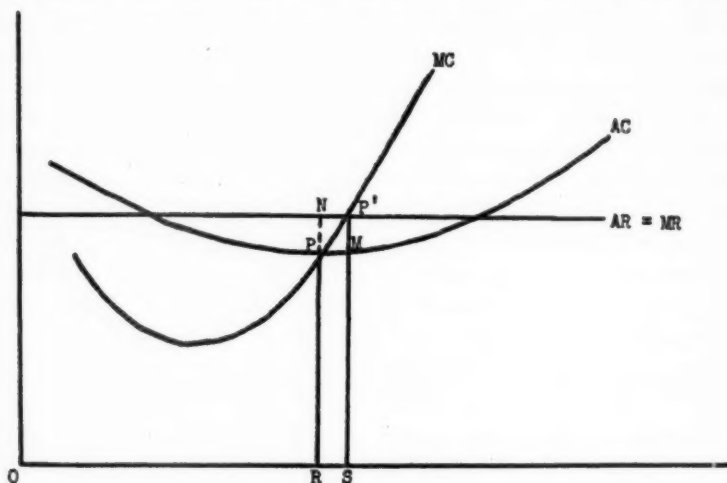


DIAGRAM I

are also the patrons, their interest is in maximizing their returns as sellers of farm products or in minimizing their costs in the purchase of supplies. The management of cooperatives should take account of this in its policies.

The bearing of these differences may be shown by indicating the price and output policies which result from them under different market conditions for both marketing and purchasing cooperatives and their private profit competitors and then analyzing these results under welfare terms.³

A. The Case of Pure Competition in Buying and Selling

According to standard value theory, the management of a private profit firm will attempt to maximize income by operating at a level which equates marginal cost with marginal revenue. Under conditions of pure competition, if any entrepreneurial rent is not treated as a cost to an intra-marginal firm, the level of output at which marginal cost equals marginal

³ The most general cases have been chosen for analysis, but it is a simple matter to interpret them in terms of any specialized market situations or cooperative methods of doing business.

revenue, S in Diagram I, will lie to the right of the level of output giving minimum average or per unit cost at R. Output level S is nevertheless the point of maximum profit to the firm in spite of the fact that per unit costs are higher there than at R.

This is also true of the cooperative firm which it is assumed is likewise operating under conditions of pure competition and is charging or paying the going market price in accordance with the usual cooperative rule. But the significant point is that from the point of view of a rational cooperative management, this is not the point of optimum operation. The entrepreneurial interest of the members is not in maximizing the total return of the cooperative. The interest of each member is to obtain his marketing or purchasing service at the least possible cost.⁴ But at the output level S which maximizes the firm's profits, the unit costs are above the minimum point. It will therefore be to the interest of the members to have operations carried on at the scale OR which gives the minimum per unit cost.

It might be objected that what the farmer gains in lower marketing or purchasing cost, he will lose or more than lose as an entrepreneur of the cooperative. That this is not true is due to one of the distinctive features of cooperative organization. The farmer shares in the profit or surplus (beyond any limited return on his investment in the association) only in proportion to his purchases or sales through the cooperative by means of the familiar patronage dividend. Since the amount of his product for any given period is fixed, a larger total profit to the firm will not mean a larger distribution of profit to the individual patron, since total patronage must increase more than in proportion to the increase in total profit in order to obtain the added profit. To the farmer, the larger total profit at output OS means that his costs, SM, have not been minimized, nor P'M, his per unit share of the total profit, maximized. Since his physical patronage is a fixed amount, he is interested in a maximum per unit return. That point is given by an output of OR. Since NP is greater than P'M, and since the farmer has a fixed amount of patronage, his individual total return will be greater when the larger per unit return, NP, is spread over that patronage than when P'M is his per unit return.

So long as the comparable private and cooperative firms are making an economic profit, the most advantageous level for the cooperative is to the left of the maximum profit level. If it should happen that in the short run an economic loss was being incurred, the point of optimum output for the cooperative would lie to the right of the point of minimum loss for the firm. This can be seen in Diagram II where OR represents the best

⁴ Since the cost of supplies or of the farmers' produce does not change with scale, the cost curves may be considered as including only costs of operation.

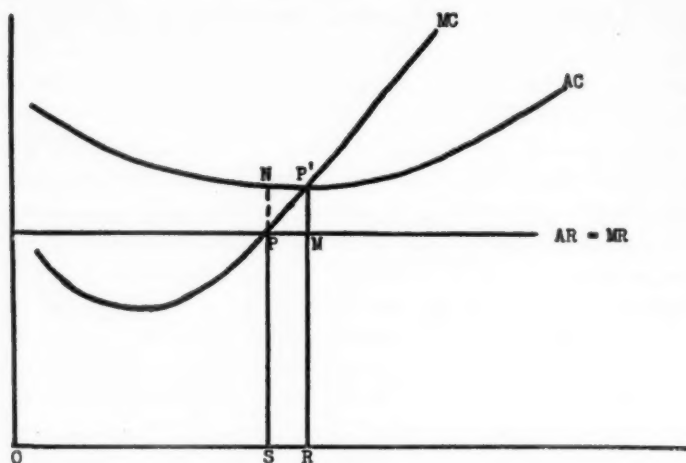


DIAGRAM II

short-run cooperative output and OS the best short-run position to minimize total firm loss. The cooperative will still be maximizing its patrons' income by choosing the minimum cost level, since their per unit loss is still less than if output OS were chosen. At that level of output, the loss per unit would be PN, which is larger than P'M. The more rapid loss of invested capital does not offset this more than proportionately because, again, his patronage is a fixed amount, so that his total entrepreneurial loss is minimized by having the smallest per unit loss.

Having established the appropriate managerial policies for a cooperative with respect to level of output, attention may now be given to their effect on the "optimum" allocation of resources in terms of economic welfare. For, in spite of its defects, welfare analysis does seem to give the best objective method of analyzing the results of a particular method of distributing the economic resources available to society.⁵

The basis of the analysis in terms of economic welfare may be briefly stated. The average revenue curve is assumed to give the market equivalent in terms of money of the marginal utility of the product purchased.⁶ Secondly, it is assumed that the marginal cost curve represents the opportunity cost of using the same resources elsewhere. If these two assumptions are granted, then it follows that production should be carried to the point where marginal cost is equal to the marginal demand price

⁵ See, for example, Abba P. Lerner, *The Economics of Control*, New York, 1946; J. R. Hicks, "Rehabilitation of Consumers' Surplus," *Review of Economic Studies*, February, 1941; and H. Hotelling, "The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates," *Econometrica*, July, 1938.

⁶ This is subject to the qualification that the marginal utility of money is equal to all individuals, and that different individuals' preference systems are the same.

as given by the average revenue curve. This will represent a position of maximum economic welfare, since it will mean that the utility received by consumers from the last unit produced is just equal to the opportunity cost of producing it. Any shifting of resources into or out of the industry would result in a lower total economic welfare, since resources would not be allocated in terms of consumer demand.⁷ A consideration of the diagrams showing the rational levels of output for cooperative and private firms will show to what extent each conforms to the criteria for maximum economic welfare. It is perhaps a little surprising to find by observation

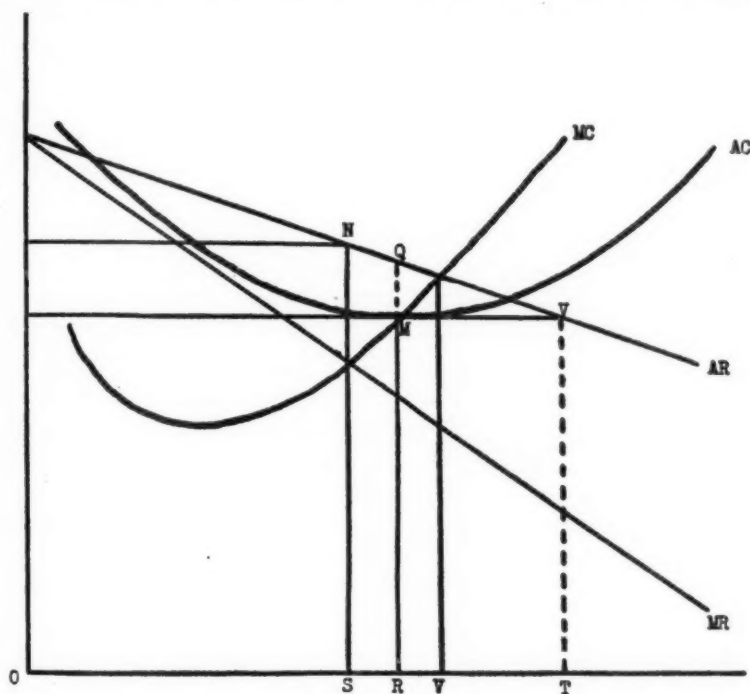


DIAGRAM III

of Diagram I that the rational cooperative management under conditions of pure competition would not operate at the optimum welfare level while the private profit firm would. The socially desirable level of operation is OS where the marginal cost curve is equal to the average revenue curve. Whether the cooperative is a purchasing or a marketing society, it will consistently operate at a lower level of output than the private firm seeking

⁷ It should be added that the analysis assumes the absence of distortions due to monopsony in the marginal cost curve. Because of the characteristics of the typical farmer cooperative, it is sometimes possible to apply this approach to welfare problems in a limited way even where monopsony is explicitly introduced.

to maximize the total profit to the firm. From the economic point of view, a larger share of resources should be allocated to the task than the self-interest of the cooperative members would permit. It is an interesting anomaly of the cooperative entrepreneurial function that in the classical case of pure competition, it actually operates toward a restriction of output while the private profit firm operates at the optimum point in terms of the socially desirable distribution of resources.

B. The Case of Monopolistic Sale and Competitive Purchase

With the introduction of monopoly elements, it will be necessary to distinguish between purchasing and marketing cooperatives. Loss situa-

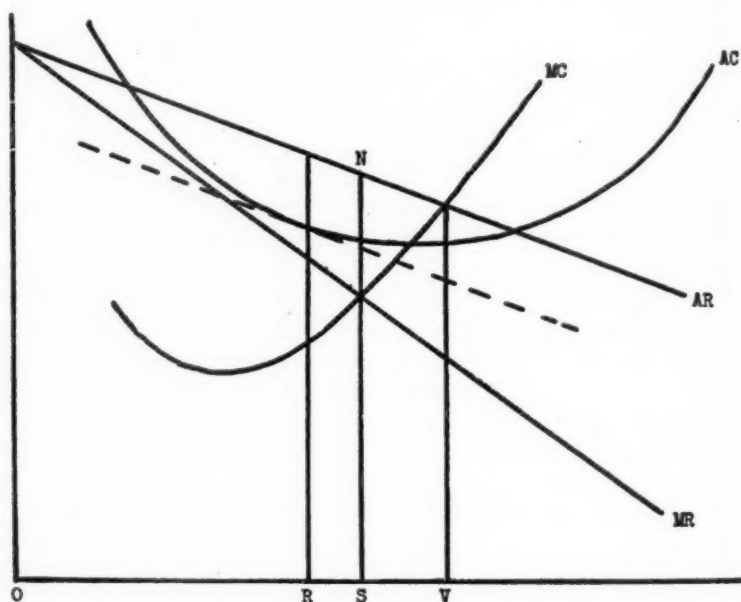


DIAGRAM IV

tions will be ignored since their analysis throws no additional light on the problems of interest here. Diagram III illustrates the case of monopolistic competition in selling with competitive purchase of supplies and factors of production for a purchasing association. The private firm operates at an output OS given by the intersection of the marginal revenue and marginal cost curves. The cooperative, however, will operate at an output level of OR which minimizes the per unit costs in which the members are interested.⁸

⁸ The common practice of cooperatives is to charge the going market price. Since the commercial firm would charge NS this might be thought to prevent the coopera-

The case of the marketing association under conditions of competitive purchase but monopolistic sale is illustrated in Diagram IV. Since it is assumed that both the private firm and the cooperative are buying the farmers' products at the competitive price, the cost curves may again be assumed to be net of this price. The private firm will set its sale price at SN and output at OS. However, in most cases this will not be the price which is to the greatest advantage of the farmer. His interest is in obtaining the largest net per unit addition to the price at which he originally sold his produce. This will be obtained where the vertical distance between the average revenue curve and the average cost curve is the largest. Diagrammatically, this occurs where the slopes of the two curves are equal at output OR.⁹ It is not, as in previous situations, at the minimum point on the average cost curve, due to the possibility of the cooperative obtaining a higher price by selling a smaller total output.¹⁰

The socially optimum allocation of resources for both types of cooperatives under conditions of monopolistic sale and competitive purchase occurs at OV in Diagrams III and IV. In neither case does either the cooperative or the private profit firm operate at the optimum level. It is to be noticed, however, that it is not possible to be sure without examining the particular case whether the cooperative firm's output will be larger or smaller than that of the private profit firm. This will depend upon whether the marginal cost curve cuts the marginal revenue curve to the left or to the right of the point on the average cost curve, which maximizes the cooperator's welfare. Geometrically, it is evident in Diagram III that in the case of purchasing cooperatives, whenever the minimum point of the average cost curve lies above the marginal revenue curve, cooperative output will be closer to the optimum social output. Whether the output of a marketing cooperative lies closer to the social

tive firm from charging the same price if it wished to obtain a volume of OR. However, if it is assumed that the cooperative patrons purchase in the expectation of some patronage dividend, the effective price to them approaches TV. To the extent that this is recognized by prospective patrons, the demand for the cooperative's goods would approach OT, and so no difficulty should be found in obtaining a volume of OR. In those cases where the cooperative output was less than the private level, the problem would simply be one of limiting patronage to the level most advantageous for the existing members. Thus, in either case, by exercising a policy of exclusion, the cooperative can always attain the optimum scale of operation.

⁹The appropriate level of output could also be found by adapting Marshall's device of a "monopoly revenue schedule" selecting the output giving maximum per unit profit. This will be given at the point where a line parallel to the X axis is tangent to the monopoly revenue schedule. Alfred Marshall, *Principles of Economics*, 8th Ed., London, 1920, footnote 1, pp. 479-480.

¹⁰It is evident that in fact the condition determining the cooperative level of output is the same in the monopolistic and competitive cases. Determination of output under pure competition at the minimum point of the average cost curve is but a special case of parallelism in which the average revenue curve is a horizontal line and so has the same slope as the minimum point on the average cost curve.

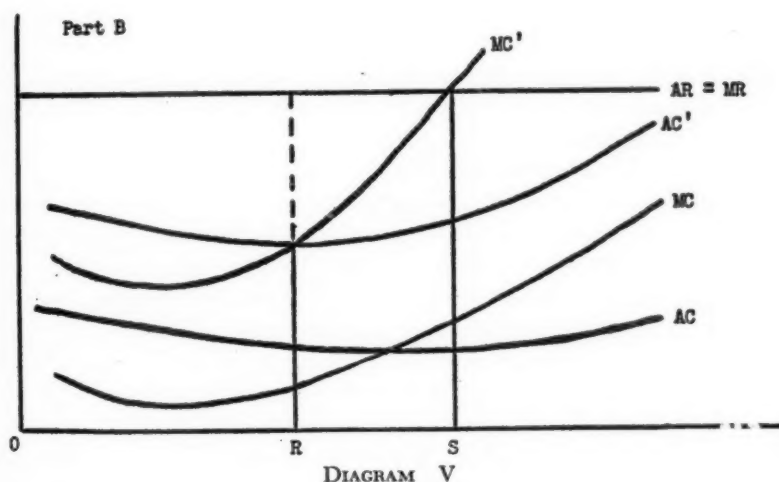
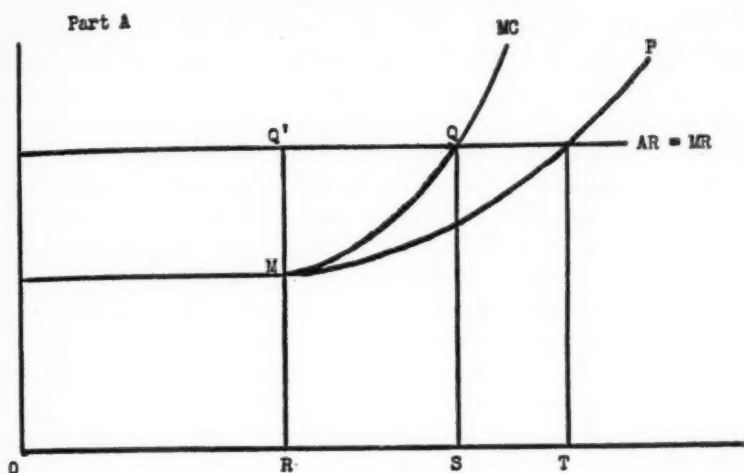
optimum depends not only upon the above condition, but also upon the relative slopes of the cost and revenue curves. By way of generalization, all that can be said is that the nearer the average cost curve lies to the average revenue curve, the more likely it is that the cooperative's output will lie nearer the socially optimum level.

The likelihood that cooperative enterprises will operate closer or further from the socially desirable level is thus a matter for empirical investigation and outside the scope of this paper. It is interesting to note, however, that when the cost and revenue conditions are assumed to be the same, a marketing cooperative will always operate at a lower level than will a purchasing cooperative, and therefore further from the most desirable outlay of resources. The most profitable point of operation for the members of a purchasing association is at the minimum point on the average cost curve. A marketing cooperative finds its best point of operation where the slopes of the average revenue and average cost curves are the same. The sloping demand curve typical of conditions of monopolistic competition thus assures that this point will be found to the left of the minimum point of the average cost curve. Because of the influence of this factor, there is perhaps more reason for expecting the marketing cooperative level of output to be further from the socially optimum point than its competing firm than would be the case for a purchasing cooperative.

C. The Case of Competitive Sale and Monopsonistic Purchase

The third set of conditions is that of monopsonistic purchasing, but competitive sale of the farmer's supplies of his product. In the ordinary case, it is not possible to show the effects of monopsony purchase on the level of output on a diagram on which the scales are measured in outputs. This is because such charts normally represent a manufacturing concern and the units which are being purchased are inputs of productive factors. In these cases, it is not possible consistently to transform costs measured in terms of physical units of inputs into costs measured in terms of physical units of output. In the present case it is interesting that, if other cost items are assumed to be purchased competitively, the effects of monopsonistic purchase of the farmer's supplies or his product could be added in directly with other figures of costs on an output basis on the ordinary output diagram. This is due to the fact that in the present situation the inputs are measured in the same units as the outputs—i.e., bushels of grain, tons of fertilizer, etc.

Use is made of this peculiarity in the present analysis to show the monopsonistic effect net of all other costs. Having isolated the influence of the monopsonistic element, it is then possible in some cases to add it



into a single diagram with the other cost elements, or in other cases, simply to observe the direction of its influence.

Again taking the case of the purchasing association first, Part A of Diagram V may be used as an illustration. Just what shape the "typical" curve showing monopsonistic purchase of a supply item would take throughout its length is impossible to say. However, in the portion relevant for this type of problem, the per unit cost-price will of course turn up at some level of purchases, as indicated by the curve P.¹¹ If no other costs influence

¹¹ If the curve should slope upward throughout its length, the solution would be similar to the explanation of Diagram VIII.

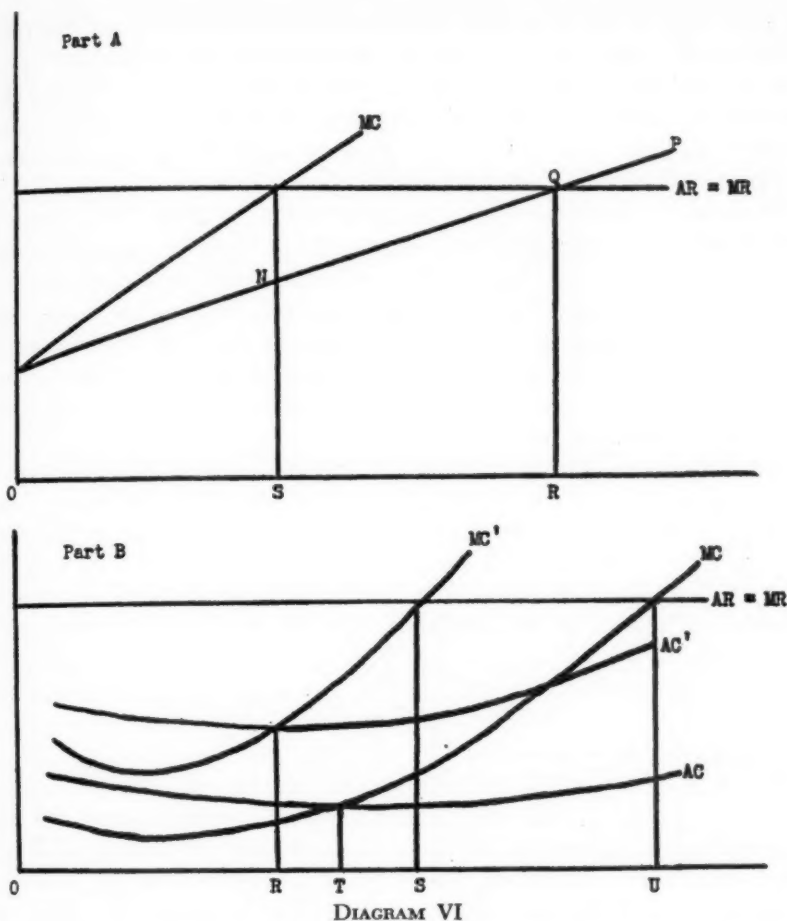
the decision, then the private firm will operate at the point S, where the marginal cost curve to curve P intersects the average and marginal revenue curves. On the other hand, the cooperative will restrict its purchases and sales to the level R. At this point the cost to the individual members is minimized when the patronage dividend of MQ' is taken into account.

The monopsonistic purchase of the units finally sold may now be combined with the competitive purchase of other factors of production to find the combined effect on the level of output. In Part B of Diagram V, AC and MC show the variation of unit average and marginal costs net of the price paid for the actual product sold. Let it be assumed first that the point at which the curve P of Part A begins to rise is to the left of the minimum point of the AC curve in Part B. When the two are added together to obtain the final cost curves MC' and AC' , it is clear that the influence of the monopsony element has been to shift the optimum level point for both the cooperative and private profit firm to the left. This results from the fact that the minimum point on the AC curve is shifted to the left when it is combined with the monopsonistic purchasing of curve P, while the right hand section of the MC curve is likewise raised.

It is possible that the price of the product to the firm might not begin to rise until a point beyond the minimum level for all other costs. In that case, even though all other circumstances were identical, only the private profit firm would be affected by the existence of monopsony.

Turning now to the marketing association, it is again assumed that only the cost of purchasing the farmer's product is determined monopsonistically. In Diagram VI, the curve P of Part A is here assumed to rise gradually with increased purchases. This shape seems reasonable for a marketing cooperative because of the probability that individual farmers have almost continually varying costs and also, after certain levels of marketing have been reached, the necessity of overcoming preferences for particular dealers or to bring in produce from greater distances.

It is clear that the private dealer would operate only at a scale given by OS at the cost price SN. At this level of operation, determined by the intersection of the marginal revenue and marginal cost curves, his monopsonistic income is maximized. If, on the other hand, as is customary, the cooperative pays the same initial price, SN, it may nevertheless operate as far to the right as OR. This is due to the fact that the effective price to the farmers between S and R after patronage dividends are paid is not the SN paid initially, but QR. To the extent that these farmers realize and expect this result, they will be willing to accept the lower initial price SN for the ultimate price of QR. Nor is there any disadvantage to the farmers between O and S in accepting the produce of the farmers between S and R since their ultimate price is not affected. Thus,



with any expectation at all by farmers of a patronage dividend, the marketing cooperative operating under conditions of monopsonistic purchase of its product but competitive sale will operate on a larger scale than the private firm as far as these influences are concerned.

When the influence of monopsonistic purchasing is combined with the effect of the competitively determined costs as in Part B of Diagram VI, it is evident the output of both cooperative and private firms tends to be shifted to the left of the purely competitive case. However, because of the steeper slope of the MC curve in Part A, the MC curve of Part B is raised relatively more than the AC' curve is raised by the curve P. Thus the commercial firm will decrease its level of output more than will the cooperative.

The existence of monopsony on the cost side introduces some variation

into the application of welfare analysis in these circumstances. The curve showing the price per unit, P in the diagrams, at various levels of operation is now considered to represent the opportunity cost of using that number of units. Maximum social economic welfare is attained when "utility" measured on the average revenue curve is equal to the opportunity cost of the commodity demanded.¹²

Because of this difference in the source of increasing social cost, it is not possible to combine directly the results of welfare analysis for that part of the costs of the firm which involve competitive or given prices of inputs to the firm and that part of the costs representing increasing costs per unit as the amounts purchased increase, as could be done for determination of output levels. Instead, the approach to the welfare problem must be to observe whether the effects of the two types of opportunity cost are reinforcing or offsetting.

It is clear from Part A of Diagram V that neither the purchasing cooperative nor the private profit firm will operate at the optimum social welfare point. This level of output is at T , whereas the private firm operates at level S and the cooperative at R . Since Part B of Diagram V shows the influence of competitive purchase of input is also to make the cooperative operate to the left of the private firm as long as there are profits, the effects are reinforcing. Thus, to the extent the cooperative management operates rationally, it may be expected that a cooperative will operate further from the optimum welfare point than a private firm attempting to maximize profit.

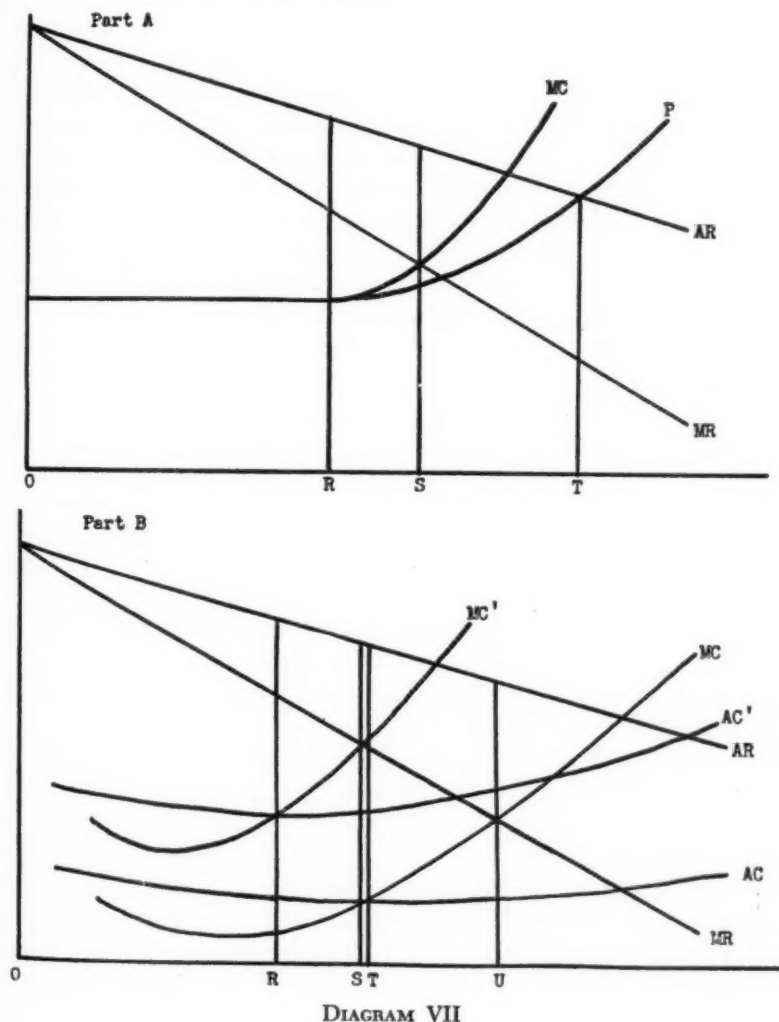
The case of the marketing cooperative, on the other hand, is indeterminate. So far as the effects on monopsonistic purchasing are concerned, Part A of Diagram VI shows that the optimum welfare point is at output OR . This is also the probable point of operation of the marketing cooperative, while the private firm will operate at output OS to the left of the optimum level of output. While empirical investigation is beyond the scope of this paper, it may be that factual inquiry would show that the importance of the cost of the produce to be marketed relative to the other costs of the firm is frequently such that this factor, which brings the cooperative closer to the optimum point, would tend to outweigh the influence of the competitive purchase of other inputs.

Analytically, however, the result is indeterminate.

¹² In the first situations described from a welfare point of view, the unit costs of the various items purchased by the firm are considered to be unaffected by the scale of output of the firm. Therefore, increases in the costs per unit of output come from such factors as result in rising costs as capacity is reached. This type of increase in the cost of an individual product is a direct social cost and is reflected in increased opportunity costs for added (or marginal) units of the product produced. On the other hand, where increased sale results in increasing cost per unit of the items purchased, it is the increased price of these items (Curve P) which represents the increased social cost in terms of other goods foregone.

D. The Case of Monopolistic Sale and Monopsonistic Purchase

The fourth and last of the possible situations requiring analysis, is that which combines monopsonistic purchasing with monopolistic selling. Taking first the case of the purchasing association, it may again be assumed as in the previous situation involving monopsony, that only the purchase of the item of supply is involved. It is clear from Part A of Diagram VII that, as in the competitive sale case, the cooperative will restrict its level of operation to OR so far as the influence of this particular cost item is concerned. On the other hand, the private profit firm will operate at the level OS. The influence of monopsony is always toward smaller scale of operation for the purchasing cooperative.



Following the earlier procedure, the effect of the monopsonistic purchase of the item of supply may now be combined with unit cost curves resulting from the other items of cost as in Part B of Diagram VII. AC and MC again represent the variation of unit average and marginal costs net of the price paid for the actual unit of supply. Assuming that the curve of the price of the unit of supply, P, begins to increase to the left of the minimum point of the AC curve, the influence of the monopsonistic element is again seen to be to shift the most advantageous scale of operation to the left for both the cooperative and private profit firm. This is because the minimum point of the AC curve is shifted to the left when the curve P is added in, while the MC' curve rises relatively more rapidly when the marginal curve associated with P is added into the other marginal cost elements.

One significant difference arises because of the assumption of monopolistic rather than competitive sale. Under competitive conditions, the scale of operation of the cooperative was always less than that for the private profit firm so long as a profit was being made. However, when sale is made under monopolistic conditions, it will again be found that the cooperative may operate at the largest scale if the marginal revenue curve cuts the marginal cost curve to the left of the minimum point on the average cost curve. There is, of course, no way of telling about this except by examination of particular circumstances.

When the technique of separating out the influence of that part of the cost composed of the monopolistic price for the farmer's product is applied to the case of the marketing cooperative a ridiculous though not surprising result is obtained. Under the circumstances envisaged in Part A of Diagram VIII, the maximum return per unit of output for the fortunate farmer who stayed in the association would be obtained at a level of output just beyond the zero mark. This is, of course, the result of the firm having to sell increased output at decreasing prices while the cost of obtaining that output is only a nominal cost since part of the price is paid in patronage dividend. The influence of monopsonistic conditions in the purchasing of the farmer's output would thus always be toward an output level to the left of that established for the private firm at OS where marginal cost and marginal revenue are equal.

When the curves of Part A are combined with the other costs per unit in Part B, it is evident that the effect is to shift the maximum point of advantage to the left for both the cooperative and the private profit firm. As was shown in Diagram IV, the output which the cooperative will choose occurs where the slopes of the average cost and average revenue curves are equal. This occurs at output OR in the diagram. As in previous cases involving monopolistic sale, it is not possible to tell *a priori* whether the cooperative will operate at a higher or lower rate, since this depends

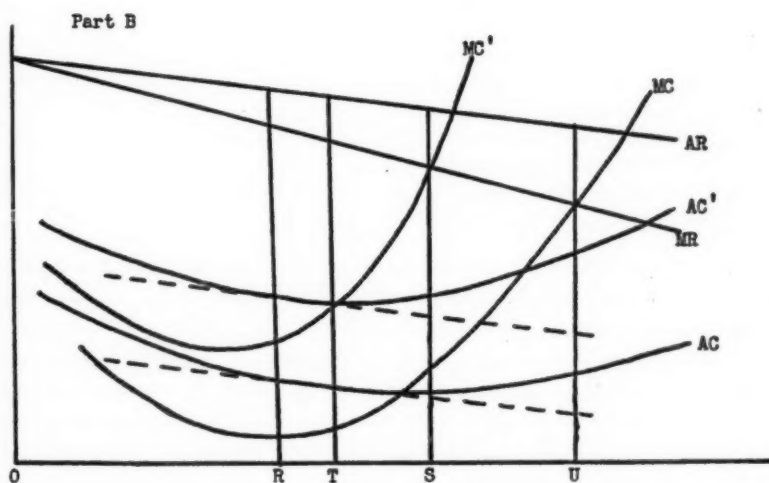
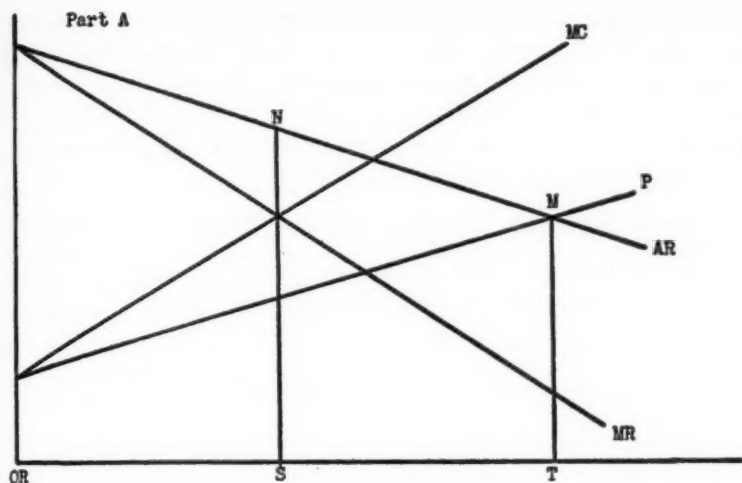


DIAGRAM VIII

upon where the marginal cost and marginal revenue curves, determining the commercial firms' level of operation, happen to cross.

In welfare terms, the introduction of monopolistic selling makes not only the marketing but also the purchasing case indeterminate. The influence of the monopsony element continues to be to make the cooperative operate further from the optimum output OT in Part A of both Diagrams VII and VIII. The influence of the competitively priced inputs of Part B of both diagrams, however, may operate in either direction depending upon the position of the cost and revenue curves. The welfare result is thus indeterminate.

It may be observed, however, that at least as far as the geometry of the two cases is concerned, there is more likelihood of the private firm being nearest to the socially desirable level, for the influence of the monopsonistic element is always to bring the scale of operation of the cooperative further from the social optimum, while the influence of the monopolistic element may be in either direction.

II. *Conclusions on the Results of Differing Management Policies*

The results of the preceding analysis may now be brought together in summary form. Some economic profit is assumed in all cases.

1. Pure competition in buying and selling.
 - a. Purchasing—private firm alone operates at optimum welfare level.
 - b. Marketing—private firm alone operates at optimum welfare level.
2. Monopolistic selling, competitive buying.
 - a. Purchasing—indeterminate, with neither at optimum level.
 - b. Marketing—indeterminate, but somewhat more probable that private firm nearer optimum level than in the case of purchasing firms.
3. Competitive selling, monopsonistic purchase.
 - a. Purchasing—cooperative operates further from optimum level.
 - b. Marketing—indeterminate, but cooperative may tend to operate somewhat nearer optimum level because of probable cost conditions.
4. Monopolistic selling, monopsonistic buying.
 - a. Purchasing—indeterminate, but somewhat more probable that private firm nearer optimum level.
 - b. Marketing—indeterminate, but somewhat more probable that private firm nearer optimum level.

In only two cases, then, will a firm of either type operate at the socially optimum level, that of a private profit competitor of either a purchasing or marketing cooperative, operating under conditions of pure competition in buying and selling. In one other situation, competitive selling and monopsonistic buying, the influence of the market and cost conditions is to bring the private profit competitor of the purchasing cooperative closer to the social optimum. In the remaining cases, no conclusive statement could be made. In several situations, however, the private profit firm seemed a little more likely to operate closer to the optimum level for geometric reasons, while in one case the cooperative seemed a little more likely to operate closer to the optimum level because of the probable relative importance of different costs.

One particularly significant question which arises in connection with this analysis is the extent to which cooperatives in fact operate in the rational manner described above. Real evidence bearing directly upon this point is lacking. Cooperative management has always had as its explicit objective the lowering of the cost of marketing or of purchasing for their patrons. This suggests that cooperative managers operate in the

manner which has been shown to be rational for the cooperative. However, it has probably not been universally recognized that rational cooperative management may involve a different scale of operation from that desirable for a private profit firm. It is highly probable that many cooperative managers have assumed that by maximizing profit to the firm they were also operating in the best interests of their farmer-owners. Thus, while they may have been expressing verbally what would be the most advantageous goal for their patrons, they may in fact have been pursuing unknowingly the wrong goal.

However, even where cooperatives do not in fact follow the most rational course, the analysis in welfare terms yields significant results. This is due to the fact that where cooperatives attempt to maximize profit to the firm, they in fact approach the behavior of private profit firms. When this is the case, there is no reason, under the assumptions of welfare analysis and without regard to any other considerations, to give any preference with respect to income tax or other forms of public assistance to either form of organization for purposes of public policy formation. On the other hand, when cooperatives do operate in a rational manner to maximize the incomes of their patrons, there is some logical possibility that on the whole they will operate less in the public interest than private firms because in more possible situations than not the analysis indicates that private firms attempting to maximize profits to the firm itself will or will tend to operate closer to the point of optimum allocation of resources.

It is not possible, however, to generalize with certainty as to whether on the whole the various conditions under which cooperatives and competing firms operate bring one or the other closer on the average to the best use of resources. If it could be assumed that cooperatives and private firms were distributed at random among the various possible situations, then it would be fair to say that private profit firms on the average operate in a more socially advantageous manner. If this assumption is not true, which certainly seems probable, then it becomes a matter for empirical investigation beyond the scope of this paper as to which situations are most frequent.

VARIATIONS IN PRICES PAID FOR FOOD AS AFFECTED BY INCOME LEVEL*

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Objectives of This Paper

DO VARIOUS income groups pay significantly different prices for identical foods and, if so, how can the differences be explained?

Popular notions on price-paid income behavior are vague, conflicting, and not empirically supported. A little speculation reveals as probable the beliefs that the higher or, alternatively, the lower income groups would pay the highest prices. The possibility of a U-shaped price-income relationship has been suggested several times.

Some information on these questions may be garnered from the consumption studies published in the last few decades. Sometimes, prices paid for food items at various income levels are actually reported, as in a survey conducted by the U. S. Bureau of Human Nutrition and Home Economics in the spring of 1948. In other cases, prices can be calculated by dividing through average expenditures and quantities purchased. In either case, weighted average prices are obtained; none of the published results give any information on the range of prices paid by any income group.

The Concept of the Consumption Function

Effect of income on demand for food is of recognized significance and has been a popular field for empirical research since Engel's time. Results of consumption studies have been presented in various ways.¹ Economic consuming units have been defined as persons, families, households. Income has been taken as money income, real income, income after taxes, per-capita, or per-household income. The consumption variable has been expenditure, quantity consumed in pounds or, alternatively, measured in terms of some nutritional quality of the food. The various curves resulting are of the same general shape and sort, and for the same raw data, it is usually possible to make transformations from one sort of curve to the other as desired use dictates the need.

Only where the adjustment between two alternative variables, such as expenditure and quantity consumed, involves a third factor, which is it-

* Giannini Foundation Paper Number 129.

¹ For a more comprehensive discussion, see R. G. D. Allen and A. L. Bowley, *Family Expenditure*, P. S. King and Sons, Ltd., London, 1935.

self functionally related to one other variable, will the income elasticities indicated by the two relations differ. Thus, differences would appear between two curves constructed with quantity and expenditures as the "consumption" variable, where average price paid varied according to income, even though the relationships were based on the same data.

That a significant relationship between prices paid and income should exist is entirely reasonable. Variations in the quantity and quality of merchandise and services bought are likely to be price-related with some income groups purchasing more frequently at places where more services and higher quality goods are offered, and higher prices charged. With a positive income elasticity of demand for services, consumers appear to pay higher prices at higher levels of income.

The consumption function is a sort of cross-sectional snapshot of community behavior. At all levels of income and regardless of circumstances, a rational consumer must adjust his expenditures for maximum satisfaction. A change in relative prices or introduction of new, competing or complementary goods will affect those adjustments and, hence, consumption functions.

Changes in consumption functions due to changes in relative prices or availability of goods can be observed in many areas of American life. A good example is the automobile, which has substantially changed the character of demand for housing, not to mention the demand for horses. Changes in retail practices may very well change the consumption functions for certain classes of food, or for food as a whole, if consumers are affected by light, pleasant retail stores, self-service in supermarkets, improved packaging, sanitation, and methods of preserving quality in perishable merchandise. It seems particularly likely that technological advance in marketing would affect price differentials at which different kinds of services could be obtained, and that this, in turn, would cause changes in the differences between consumption functions of the income-quantity type and the income-expenditure type.²

Ways to Discover Evidence of Differences in Prices Paid

Let us examine two consumption studies with a large number of categories and for which average prices can be calculated—the 1935-36 Consumer Purchase Study and the 1948 study of the U. S. Bureau of Human Nutrition and Home Economics.

Classification of food into a large number of categories has the advan-

² Rates of consumption producing maximum utility are more precisely defined in terms of partial derivatives of a utility function and an income-expenditure function. After change in the utility function or prices of goods resulting from invention of new goods or change in the old, a change in quantities purchased would be required to re-establish the maximum utility position.

tage of limiting the number of different items which might be lumped under one heading. But it provides no way of handling quality or brand differences, and some categories such as "ground beef," "cheese," and "wheat cereal" may still conceal a substantial product variation. Nevertheless, extensive subdivision makes a study valuable for our purposes.

Whether there are price variations which follow a consistent income pattern is not immediately obvious. Graphic plotting shows only a criss-cross of lines. The problem is to find a suitable statistical test.

By using several methods of comparison, the possibility of fortuitous results is reduced. First, we can make a numerical count to see how often a given income group paid an average price lower than that paid by any other group, or how often it paid the highest price.

A somewhat more refined procedure is the method used by Friedman in another connection.³ Income groups can be ranked according to average prices paid and average ranks calculated to see if the differences in rank are significant. Friedman applied a χ^2 (chi square) test in his work and that procedure is followed here. These two methods of comparison present closely-related but somewhat different information about price-income behavior. They both have limitations, especially because all items are given equal weight. The second method has a special importance in that it is used to establish the statistical significance of observed difference.

Results from the 1935-36 Study of Expenditures

Table I summarizes results from the two comparison methods when applied to data for five groups of cities as reported in the 1935-36 study.⁴ Part A shows that, according to the first method, the lowest income group in each region bought more items at a lower average price than any other income group. Almost as consistently, too, the highest income group bought more items at the highest average price. Failure of the middle income groups to buy a large number of items at either the highest or lowest average price is also of interest.

This information is consistent with that obtained by the second method

³ Milton Friedman, "The Use of Ranks to Avoid the Assumption of Normality Implicit in the Analysis of Variance," *Journal of the American Statistical Association*, Vol. XXXII, 1937, pp. 675-701. The method has made it necessary to restrict comparisons to foods for which there were purchases reported in all income categories. It is appreciated that a comparison could have been made by analysis of variance. Besides being simpler, Friedman's method avoids, as the title of his paper suggests, an assumption of normality which is clearly inappropriate here.

⁴ "Family Expenditures in Selected Cities, 1935-36," U. S. Bureau of Labor Statistics, Vol II, Food Bulletin 648, Washington, Government Printing Office, 1940. Eligibility requirements were sufficiently severe to mean that the results are not completely representative of the population as a whole. Requirements and details of sampling and adjustment of income by value of housing, fuel, etc., received without payment are described in the preface of Bulletin 648.

TABLE I, PART A. NUMBER OF FOOD CATEGORIES FOR WHICH INCOME GROUPS PAID A HIGHER OR LOWER AVERAGE PRICE THAN ANY OTHER (INCLUDING TIES) URBAN GROUPS, MAY THROUGH AUGUST, 1935-36 STUDY OF CONSUMER EXPENDITURES

Urban Group and Prices Paid	Annual Adjusted Income								Number of Cate- gories Compared
	500- 999	1,000- 1,499	1,500- 1,999	2,000- 2,999	3,000- 3,999	4,000- 4,999	5,000- 7,499	7,500- over	
New York City and Chicago									
Lowest	41	13	8	1	1	4	3	4	73
Highest	6	1	1	0	3	14	12	36	
New England and East Central, two large and five middle-sized cities									
Lowest	33	13	5	2	5	10	← 5 →		73
Highest	1	3	2	4	15	19	← 29 →		
Southeast, one large and two middle-sized cities									
Lowest	37	19	3	1	2	5	← 2 →		69
Highest	3	2	0	4	12	20	← 28 →		
West Central and Rocky Mountains, two large and four middle-sized cities									
Lowest	30	16	8	0	5	12	← 3 →		74
Highest	3	3	2	8	8	19	← 31 →		
Pacific Northwest, one large and three middle- sized cities									
Lowest	36	15	3	5	6	4	← 1 →		70
Highest	2	3	4	5	7	22	← 27 →		

of comparison. According to the data on average rank which appear in Table IB, there is a strong tendency for prices paid by an income group to be higher than the prices paid by groups with lower incomes and less than the prices paid by groups with higher incomes. There is a gradual progression in average rank as the level of income increases. The regu-

TABLE I, PART B. AVERAGE RANK OF PRICES PAID FOR FOOD CATEGORIES BY INCOME LEVEL, 1935-36 STUDY OF CONSUMER EXPENDITURES, URBAN GROUPS, MAY THROUGH AUGUST

Urban Group	Annual Adjusted Income								Number of Categories Compared	x ²
	500-999	1,000-1,499	1,500-1,999	2,000-2,999	3,000-3,999	4,000-4,999	5,000-7,499	7,500-over		
New York City and Chicago	2.4	3.0	3.6	4.2	5.1	5.7	5.6	6.4	73	176.75
New England East Central, two large, five middle sized cities	2.2	2.9	3.5	4.3	4.9	4.7	← 5.3 →		73	124.20
Southeast, one large, two middle-sized cities	2.2	2.5	3.1	4.4	5.1	4.9	← 5.8 →		69	173.29
West Central and Rocky Mountains, two large and four middle-sized cities	2.5	3.1	3.5	4.3	4.8	4.6	← 5.3 →		74	96.57
Pacific Northwest—one large and three middle-sized cities	2.3	3.1	3.5	4.0	4.5	5.1	← 5.5 →		70	114.90

larity of the progression suggests a functional relationship, although average rank would not be a well-chosen variable as it does not take account of the magnitude of price differences between ranks. The numerical values of the ranks are affected, of course, by the number of income divisions being ranked, and this is not always the same.

The range of the average ranks is not of importance except in a statistical sense. The distribution of the mean ranks would be nearly normal if there were *no* relationship between price paid and income. Applying a χ^2 test to the distributions of means in Table IB tells us that, since chi square is significantly large in all cases, prices paid for food differ significantly at different income levels. The test itself says nothing about the direction of variation, which can be detected readily enough by observation.

A Third Method of Comparison

Although establishing the significance of differences in prices paid by different income levels, the above measures do not provide an estimate of the magnitude of this variation. Several types of indexes could be devised. However, we have used another method of indicating the same general kind of information. To accomplish this, we have taken the average weekly food basket actually purchased by each income group and multiplied the quantity bought of each category by a price, and then added these price times quantities. The prices used are the average prices paid by the lowest income group.⁵ The sum of these products indicates what the weekly food basket actually purchased by a given income group would have cost if bought at the prices paid by the lowest income group. The resulting series of hypothetical expenditures has something of the characteristic of a Lespeyres index.

The result of this tabulation is a series of hypothetical expenditures being hypothetical because, except in the case of the lowest income group, the prices used to calculate the "cost" of the market basket of an income group are not those actually paid. The significance of this series is that, by comparing it with expenditures actually made, we get an idea of the expenditure actually made in excess of what it would have cost if purchases were made at minimum prices. Since the tendency to pay more than minimum prices appears to be general, the added expenditure from our comparison, expressed as a percentage, should be considered in relation to expenditure for all food, whether included in the comparison or not.⁶

⁵ The "basket" was limited to foods purchased by all income groups.

⁶ Several points to bear in mind are: first, the price for the lowest income group was an average and that purchases actually were made at prices lower than this "minimum"; second, the market basket that can properly be attributed to an income group depends on prices charged; and third, very likely excluded categories would not be a representative sample.

TABLE II. WEEKLY EXPENDITURE ON FOOD IN FIVE URBAN GROUPS AND ADDED EXPENDITURE DUE TO PAYING PRICES IN EXCESS OF THOSE PAID BY THE LOWEST INCOME GROUP
 [(ACTUAL) - ($\Sigma P_i Q_i$)] MAY-AUGUST, 1935-36

Urban Groups	Adjusted Income							
	500- 999	1,000- 1,499	1,500- 1,999	2,000- 2,999	3,000- 3,999	4,000- 4,999	5,000- 7,499	7,500- over
New York City and Chicago								
73 categories								
Actual expenditure	6.17	7.12	8.01	9.28	10.44	11.58	11.34	16.26
(Actual) - ($\Sigma P_i Q_i$)	.004 ^a	.29	.48	.88	1.15	1.51	1.77	2.97
Incremental per cent	0.0	4.1	6.0	9.5	11.0	13.0	15.6	18.3
Total food expenditure	7.42	9.11	10.28	11.98	13.46	14.66	15.27	22.81
New England and East Central								
74 categories								
Actual expenditure	5.85	7.01	7.88	8.76	9.27	10.30	10.80	
(Actual) - ($\Sigma P_i Q_i$)	.00	.49	.34	.58	.86	.88	1.01	
Incremental per cent	0.0	7.0	4.3	6.6	9.3	8.5	9.4	
Total food expenditure	7.07	8.65	9.90	10.98	11.87	13.55	14.32	
Southeast								
69 categories								
Actual expenditure	4.72	5.93	7.32	8.06	9.82	10.41	12.97	
(Actual) - ($\Sigma P_i Q_i$)	.002 ^a	.12	.36	.79	1.13	1.44	2.04	
Incremental per cent	0.0	2.0	4.9	9.8	11.5	13.8	15.7	
Total food expenditure	6.29	7.68	9.20	10.16	12.38	13.56	16.47	
West Central and Rocky Mountains								
74 categories								
Actual expenditure	5.34	6.52	7.19	7.90	8.76	8.62	10.88	
(Actual) - ($\Sigma P_i Q_i$)	.00	.17	.42	.63	9.2	1.19	1.50	
Incremental per cent	0.0	2.6	5.8	8.0	10.5	13.8	13.8	
Total food expenditure	6.56	8.10	8.99	10.00	11.06	11.76	15.02	
Pacific Northwest								
73 categories								
Actual expenditure	5.38	6.56	7.06	8.02	8.39	8.90	11.24	
(Actual) - ($\Sigma P_i Q_i$)	.004 ^a	.11	.30	.47	.67	.92	1.34	
Incremental per cent	0.0	1.7	4.2	5.9	8.0	10.3	11.9	
Total food expenditure	6.65	8.19	8.30	10.16	10.68	11.68	15.43	

^a Rounding causes figures to be other than zero.

It will be noted that this added expenditure follows a regular upward progression and, in most cases, it would not be difficult to fit a smooth curve to the data. The comparability of the increase in added expenditure for different regions is also noteworthy.⁷

Results from the 1948 Study of Expenditures

The same tests were applied to data collected in 1948. This study was conducted in 68 widely scattered urban areas in three different seasons and the tabulated results are comparable in general form to those of the Consumer Purchase Study of 1935-36. The published results summarize

⁷ Equally large χ^2 's were obtained with the September-November data, when compared in the manner of Table IB, and they varied in a manner that belies any idea of regional variations in χ^2 's.

TABLE III, PART A. NUMBER OF FOOD CATEGORIES FOR WHICH INCOME GROUPS PAID A HIGHER OF LOWER AVERAGE PRICE THAN ANY OTHER (INCLUDING TIES) IN FIVE CITIES OR GROUPS, 1948

City or Group and Prices Paid	Annual Income after Taxes							Number of Categories
	Under 1,000	1,000-1,999	2,000-2,999	3,000-3,999	4,000-4,999	5,000-7,499	7,500-over	
United States Urban—Spring								
Lowest	39	18	6	0	4	9	5	81
Highest	11	3	3	3	7	12	42	
Birmingham—Winter								
Lowest	33	16	7	8		←11→		75
Highest	18	13	7	16		←21→		
Birmingham—Fall								
Lowest	17		18	25		←19→		74
Highest	17		8	23		←28→		
					4,000-5,999	6,000-over		
Buffalo—Winter								
Lowest	10		5	16	11	24		66
Highest	21		6	7	8	23		
Buffalo—Fall								
Lowest	30		17	22		←15→		80
Highest	19		14	13		←38→		
Minneapolis-St. Paul—Winter								
Lowest	22		22	14	16	19		93
Highest	22		14	8	18	31		
Minneapolis-St. Paul—Fall								
Lowest	31		18	13		←18→		77
Highest	21		12	22		←24→		
San Francisco—Winter								
Lowest	23		14	16	14	10		77
Highest	20		7	9	17	23		
San Francisco—Fall								
Lowest	24		25	22		← 4→		74
Highest	22		12	10		←31→		

separately the data on four large cities in each of three seasons and on the 68 urban areas combined in the spring.⁸

Differences in eligibility requirements and definitions of income prevent direct comparison of these two studies, although the results should permit detection of any pronounced change in price-income relationships between 1935-36 and 1948.

⁸ Families were classified by 1947 income, after deduction of federal taxes, with certain windfall incomes excluded, most important of which was terminal leave pay of discharged veterans. No added equivalent income from owned homes, etc., was included. For direct comparison, it would be necessary to estimate the income adjustment made to account for owned housing in the 1935-36 study, windfalls, and the level of federal taxation in 1947. This might be done, but it would not be so easy to account for the effect of restricting the earlier study to "white non-relief" families and certain other differences in family eligibility requirements.

Details of the survey and basic data appear in the series of 15 photolithed preliminary reports issued by the U. S. Bureau of Human Nutrition and Home Economics under the general heading, "1948 Food Consumption Surveys." The first was issued in November, 1948, and the last in November, 1950.

TABLE III, PART B. AVERAGE RANK OF PRICES PAID FOR FOOD CATEGORIES BY INCOME LEVEL IN FIVE CITIES OR GROUPS, 1948

City or Group	Annual Income after Taxes							Number of Categories	χ^2
	Under 1,000	1,000-1,999	2,000-2,999	3,000-3,999	4,000-4,999	5,000-7,499	7,500-over		
United States Urban									
Spring	2.9	3.2	3.6	4.0	4.3	4.3	5.6	81	82.4
Birmingham									
Winter	2.6	2.9	3.1	3.2	$\leftarrow 3.2 \rightarrow$			75	11.79
Fall	$\leftarrow 2.5 \rightarrow$		2.3	2.5	$\leftarrow 2.7 \rightarrow$			74	4.62
					4,000-5,999	6,000-over			
Buffalo									
Winter	$\leftarrow 3.5 \rightarrow$		3.0	2.7	3.0	2.9		66	9.24
Fall	$\leftarrow 2.3 \rightarrow$		2.3	2.4	$\leftarrow 2.9 \rightarrow$			80	11.79
Minneapolis-St. Paul					3.0	3.3			
Winter	$\leftarrow 2.9 \rightarrow$		2.8	3.0				93	4.44
Fall	$\leftarrow 2.3 \rightarrow$		2.4	2.7	$\leftarrow 2.6 \rightarrow$			77	6.52
San Francisco									
Winter	$\leftarrow 3.0 \rightarrow$		2.8	2.7	3.1	3.4		77	9.24
Fall	$\leftarrow 2.5 \rightarrow$		2.2	2.2	$\leftarrow 3.1 \rightarrow$			74	22.43

Unfortunately, the use of the small sample technique in the 1948 study means that calculated average prices often are based on very few purchases. For example, in Birmingham in the winter of 1948, a total of 267 households were sampled, and the number of families in each income level varied between 19 and 83. Of these, often as few as 10 percent reported the purchase of an item, and 10 per cent of the largest cell would still only be eight. The survey covering all 68 urban areas in the spring is most free of the difficulty produced by small samples. There were 1,558 sample families and within individual cells there are from 53 up to 410. There are, therefore, good statistical grounds for treating this part of the 1948 survey with more assurance than the rest.

According to Table IIIA, tendencies of the lowest income group to buy more items at the lowest average price and the reverse situation for the highest income group appear to be very much weaker than suggested by the 1935-36 study. The same tendency appears, however, at the low end of the distribution in seven of the nine tabulations and, in every case, the highest income group paid the highest average price for a larger number of items than did any other group.

Table IIIB shows a similar weakening of the tendencies indicated by the earlier study. The χ^2 's run considerably lower, and in only two cases does the test indicate significant variations in average rank. What we know of food marketing would lead us to expect a change between 1936 and 1948, but the data does not support the view that the price-quantity relation has been affected. The small samples of the 1948 study probably are sufficient explanation for what differences appear. Note that the 1948

study where the total sample is relatively large gave results reasonably comparable to the early study by both methods of comparison.

Since data for the separate cities were apparently inadequate, estimates of added expenditures were calculated only for the 68-city survey. Results of this calculation are given in Table IV below.

TABLE IV. WEEKLY EXPENDITURE ON FOOD IN 68 CITIES, AND ADDED EXPENDITURE DUE TO PAYING PRICES IN EXCESS OF THOSE PAID BY THE LOWEST INCOME GROUP [(ACTUAL) - ($\Sigma P_i Q_i$)], 1948

	Annual Income after Taxes						
	Under 1,000	1,000-1,999	2,000-2,999	3,000-3,999	4,000-4,999	5,000-7,499	7,500-over
81 categories—actual expenditure	11.20	14.28	17.12	19.74	19.86	19.57	24.60
(Actual) - ($\Sigma P_i Q_i$)	.0	.26	.56	.68	.86	.99	2.61
Incremental per cent	.0	1.8	3.3	3.4	4.3	5.1	10.6
Total food expenditure	14.42	18.07	21.64	25.54	25.85	25.33	33.38

Significance of The Results

These results seem to justify a generalization which, if the data are interpreted narrowly, can be stated as follows: if families of a community are grouped according to income level, as the income level increases, the per-family expenditures on food tend to exceed by an increasing amount what the same quantity of food would have cost at prices paid by the lowest income group. A more general statement, not so closely supported by the data, would be: the average price paid for food tends to increase with increases in the level of income.

Application of the χ^2 test in the Friedman fashion has shown us that differences in prices paid were statistically significant. Unless the statistical information is otherwise faulty, or different income groups have different buying opportunities, we must conclude that most consumers buy goods at higher prices than is necessary, and the degree to which this is done depends on the level of income.⁹ We may suspect that even the lowest income group acts in this fashion, although here we have less evidence. Superficially, this price-income gradient seems to be a contradiction of rational behavior, but the existence of important quality differences within groups, or of services rendered in higher priced stores, means that it may be due to buying higher grades within each group, or buying more service.

The practical necessity for limiting the number of categories used in

⁹ It is possible, but hardly likely to be the rule, that higher income groups would be victims of discriminating monopolists in the sense that prices charged low income groups would be refused to the higher income groups.

expenditures surveys likely results in higher prices being reported by higher income groups when somewhat different food items, qualities, and brands purchased in different proportions by different income groups, must be grouped together.¹⁰

The significance of this effect can be explored somewhat by comparing the price-income gradient under detailed and coarse systems of classification. "Added expenditure" for the study of 68 urban areas, conducted in the spring of 1948 and previously reported as based on the subdivision of food purchases into 81 categories, was recalculated on the basis of subdivision into only 14 large categories, such as dairy products, fats and oils, flour, and other cereal food.¹¹ This tabulation suggests that, if subdivision into more than 81 categories had been possible, the price-income gradient might have been less.

TABLE V. EFFECT ON ADDED EXPENDITURE DATA OF CHANGING NUMBER OF CATEGORIES

Per Cent Added Expenditure	Income after Taxes						
	Under 1,000	1,000- 1,999	2,000- 2,999	3,000- 3,999	4,000- 4,999	5,000- 7,499	7,500- over
81 Categories Used	0	1.8	3.3	3.4	4.3	5.1	10.6
14 Categories Used	0	4.1	7.7	9.9	11.8	13.1	19.7

In any case, the bias introduced by the less-than-ultimate subdivision would be upward. Thus, our added expenditure figures are probably best interpreted as an upper limit to the added expenditure gradient, due to factors other than quality.

Alternatively, it may be due to patronage of higher priced stores by higher income groups for reasons of ignorance or preference. To attribute paying higher prices to a preference, it is necessary to show that high income consumers *could have* patronized low price stores. It may be that the low price stores are in a section of town inconvenient to higher income groups. Geographic separation is not a fundamental difficulty, however. All groups are able to travel to whatever part of town suits them and buy at what prices are available. For the high income groups to fail to do so indicates the saving is less than what they are willing to pay for transportation.

That geographical separation may contribute to price ignorance casts more serious doubt on the idea that higher prices were paid knowingly.

¹⁰ This difficulty could be mitigated in the collection and tabulation of data by defining categories in such a way that they included only foods with approximately the same income elasticity.

¹¹ The data appear on page 9 of U. S. Bureau of Human Nutrition and Home Economics "Food Consumption of Urban Families in the United States, Spring 1948," Preliminary Report No. 5 of the 1948 Food Consumption Survey.

However, it is hard to believe that nearly all consumers in all income groups do not know that cash-and-carry stores or stores in wholesale districts are cheaper, even if they do not take advantage of the condition. One classic story about agricultural extension workers tells of a farmer who laughed at expert advice on how to improve his farming methods, saying that he already knew how to farm twice as well as he actually did. We wonder how many consumers do not know of ways to buy food cheaper than they actually do.

One study in particular suggests that ignorance and quality differences do not adequately explain the variations in prices within a small geographical area. In a study of 38 shopping districts, Doman found, for a list of 20 standardized articles, price ranges *within shopping districts* which averaged between 11 and 15 per cent and in three districts the range was over 21 per cent.¹² Close proximity and the practice of featuring prices in advertising would seem to minimize ignorance as a factor.

A Possible Objection to This Interpretation of Our Data

The quality of the data in these two consumption studies will not be discussed here as the issue is of much larger significance or scope than we can handle. It might be said in passing that data which may provide adequate information on expenditures or quantities may not provide adequate information on price-income relationships.

Differences in availability might produce a false price-income gradient when several cities are averaged and the income distribution differs substantially among them. However, precautions were taken to minimize this effect and various cities averaged together were selected for comparability. Thus, New York City and Chicago were treated together, and other cities were grouped according to rough comparability. The author does not consider this possibility very serious.

A "Marketing Services" Explanation of the Price-Income Relationship

While it may be that the price-income gradient arises from statistical methodology, the author is inclined to favor another explanation for some part at least. People would purposely pay prices higher than necessary because of something extra received and not associated with purchases made at the lower prices. This extra is, we may hypothesize, added serv-

¹² In Doman's study, comparisons were limited to 20 identical items in districts no larger than three or four city blocks. The 38 shopping districts were in 19 localities ranging from less than 1,000 population to approximately 330,000. All districts contained from three to nine stores and in half of them, chains, cooperatives, and independent stores were operating. All 38 had a chain store and 30 had independent stores. The range of cost of the 20 articles studied varied from \$2.77 to \$3.98, and the period of study was May to June, 1933. See L. Doman, "A Study in Price Differences in Retail Grocery Stores in New York State," Cornell University Agriculture Experimental Station Bulletin 665, 1937.

ices rendered by the retailer.¹³ The nature and variety of these services are considerable and generally known: credit, delivery, pleasantness of surroundings.

What, then, does the existence of marketing services and a market for them have to do with prices paid for goods which are not services? The answer is that the institutional arrangements under which marketing services are bought by the consuming public are such that they are bought in a "package" with other goods such as food items. Consumers patronize the stores which supply the package that suits them best, price differentials considered. The popular convention has been to call the price of this "package" the price of the "other good," ignoring the fact that rendering a given service may be an inextricable part of the contracted performance by the seller for which payment was made by the buyer. The effect of a positive income elasticity of demand for services is to create a positive price-income gradient in the demand for commodities such as the ones we observe in our data. Part of the expenditure reported in consumption studies as expenditure for food is really expenditure for service.

No way is provided in the data for measuring the quantity or kind of services bought. No doubt, higher income groups buy different services than those with lower incomes and demand a better quality of service. Some types of services may be inferior goods.

Support for This Explanation of the Price-Income Gradient

As well as seeming reasonable on the basis of common experience (which has always been a major source of justifications for economic theories), the services interpretation of the price-income gradient is supported by several other studies.

¹³ In a sense, this may be said of display also. And, of course, consumers may be led by loyalty or friendship to prefer a merchant who may charge higher prices. It is common for certain higher priced stores to feature unusual items or special brands, meaning that there may be real product differentiation among stores. Advantages arising from nearness can be considered a service which in some cases is associated with higher prices. These factors are likely to be related to income in this sense: with a higher income a person is more able to indulge in paying higher prices for the sake of sociability or convenience.

Under the conditions stated, price variation arising out of product variation has been eliminated by holding the product constant. Note, however, that under this author's interpretation, differences in services rendered by retailers do not constitute product variation although Chamberlin's treatment holds that they do. The author considers marketing services to be a separate good, which he does not.

For a more complete statement of this position, see G. Black, "Product Differentiation and Demand for Marketing Services," *Journal of Marketing*, Vol. XVI, July, 1951, pp. 73-79. Also see the interesting article by Kaldor leaning toward the same point of view although never clearly distinguishing between treating retailer services as a form of product variation and as a separate good. N. Kaldor, "The Economic Aspects of Advertising," *Review of Economic Studies*, Vol. XVIII, No. 45, 1949-50, pp. 21-24.

TABLE VI. CREDIT AND DELIVERY SERVICE: PROPORTION OF RETAIL FRUIT OUTLETS EXTENDING CREDIT SERVICES AND DELIVERY SERVICES IN VARIOUS INCOME AREAS, NEW YORK CITY, NOVEMBER 1939

Service and Store Type	Low Income	Medium-low Income	Medium-high Income	High Income
	Per cent			
Credit				
Grocery Stores				
Independent	80	72	66	85
Chain	0	14	4	54
Meat markets	0	62	33	73
Specialized fruit and vegetable	34	48	55	67
Delivery				
Grocery stores				
Independent	17	49	73	93
Chain	54	92	85	91
Meat markets	20	81	67	100
Specialized fruit and vegetable	21	51	76	94

Sources of data: M. P. Rasmussen, F. A. Quitslund and E. W. Cake. "Fruit Sales in Retail Grocery Stores and Meat Markets, New York City," U. S. Farm Credit Administration, p. 59. "Fruit and Vegetable Stores as Retail Outlets for Fruit," (Cornell University Agricultural Experiment Station Bulletin 815, p. 64.

In a rather extensive study of the marketing of fresh fruit, conducted jointly by the U. S. Farm Credit Administration and the Cornell University Agricultural Experiment Station, investigators collected considerable information on services rendered by different types of stores in New York City. According to the prevailing dwelling unit rentals in the surrounding area, stores were classified as being in low, medium low, medium high, and high rental areas.¹⁴ These data do not give the percentage of sales on which a certain type of service was rendered but rather the number of selling units prepared to offer certain services. This system has definite limitations, especially in a city noteworthy for close proximity of high and low income neighborhoods and so completely honeycombed with rapid transit lines.

Given all the limitations to interpretation, the variations in availability of services suggest a high income elasticity for delivery and demand for credit greatest in the highest and lowest income neighborhoods. The incentives for the demand for credit no doubt are different in each group.

That services offered usually are associated with higher prices is quite

¹⁴ Income areas are classified in these reports as follows: low, areas where median house or apartment rentals were less than \$35 per month; medium low, where the median was from \$35-49 per month; medium high, where the median was \$50-64; and high, where the median exceeded \$65.

This study also presents evidence of a positive quality-income relationship based on the same kind of stratification. See F. A. Quitslund and M. P. Rasmussen, *Retail Pricing of Fruit*, U. S. Farm Credit Administration, Washington, Government Printing Office, March, 1943, p. 49.

well established. Cash-and-carry stores usually undersell credit stores, and the early chain stores were noteworthy for their combination of low prices and few services.¹⁵

In his study of 38 shopping districts, Doman cross-classified stores by price and type of service to illustrate this tendency. The data tell nothing about income levels of persons buying in different stores but they lend important support to demand-for-services hypothesis by showing that there is in effect a positively sloping curve for services and that if higher income groups demand services, they must as a general rule pay higher prices to obtain them. If paying higher prices for services were not necessary, there would hardly be a positive price-income effect due to demand for services.

Conclusions

Consumption studies, for which data were collected in 1935-36 and in 1948 and for which samples are sufficiently large, show that quite aside from the tendency for higher income groups to buy different and more expensive foods, there is a general tendency for prices paid by an income group to be higher than prices paid by lower income groups and less than prices paid by groups with still higher incomes. If for each food item the prices paid by various income groups are ranked from lowest to highest, the average rank of the prices paid tends to increase with the level of income. If the families of a community are grouped according to the level of income, as the income level increases, expenditure on food per household tends to exceed by an increasing amount the estimated expenditure based on the average prices paid by the lowest income group.

These complementary conclusions can be summarized in the statement that prices paid for food tend to increase with the level of income. While there are some difficulties in the data which mean that some of this tendency may be due to methods of averaging or to changes in the composition or quality of foods lumped together within a single category, supplementary studies and the extensiveness of the categorization suggest that this increase in prices is probably not a mere statistical freak. This price-income tendency can be better explained as payment for the additional marketing services rendered by the more expensive stores than as the result of ignorance.

The significance of the positive price-income gradient is that there is a positively sloping consumption function for marketing services of the type supplied in the purchase of foods. The *shape* but not absolute values of this function can be found by calculating for each income group the difference between (a) actual expenditure on food of various income

¹⁵ See the study by J. Cover, "Retail Price Behavior," University of Chicago, *Studies in Business Administration*, Vol. 5, no. 2, 1936.

groups and (b) what the expenditure would have been if the various groups had purchased their food at the average prices paid by a base income group. However, we have no way of separating expenditure on food and the expenditure on services of any one income group. There is no evidence that lower income groups pay higher prices than others—in fact, quite the contrary.

Reasons exist for studying this price-income gradient even further if it be granted that the distribution of goods should be explained by a coordinated body of economic theory and empirical information. A theory of changes in the reaction of consumers to service differences and associated price differences may also provide a theoretical explanation of the startling changes which have taken place in food merchandising during the past 30 years. A positive income elasticity of demand for marketing services would seem to be contradicted by the expansion of supermarkets, which on the whole offer fewer services than the older type of store, at a time when national income is expanding rapidly. The answer may be that the efficiency of this type of enterprise by lowering the price for commodities associated with few services has so increased the price differentials associated with added services that the effect of increasing income has been more than compensated for.

In addition, I submit that the service explanation of price differences between retail stores is likely to be a more useful tool in marketing theory than the more common device of considering all services rendered by retailers to be a form of product differentiation. For one thing, the service explanation is consistent with perfect competition while accounting for price variations between selling units which otherwise are explained as due to product differentiation and monopolistic competition.

It must be conceded that consumption studies are not likely to yield unquestionable information on a price-income gradient unless precautions are taken to minimize or keep under control the untoward statistical effects which have limited the interpretation of our data. It should be possible for such studies to be conducted in such a way as to provide the kind of information demanded if we are to make good estimates of price-income gradients. Sample sizes should be adjusted to take this special need into consideration. While special studies could be devised to give information on this point, chances are that we will have to be satisfied with what can be gleaned from consumption studies and data collected mainly for other purposes.

COTTON COMPETITION—U. S. AND BRAZIL—1929-1948

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THE "Cotton South" has feared Brazilian competition in the production of that fiber for at least 100 years.¹ Since the inauguration in 1933 of U. S. Government price-support and acreage-control programs, interest in the possibility of Brazilian cotton competition has come to the fore periodically. Most of this interest has been serious in intent although some of it undoubtedly has been expressed for political effect alone.²

Our purpose in this article is to examine the competition between Brazilian and American cotton in the period, 1929-1948,³ in order to establish a background for estimating future competition between the two countries.

Brazilian Cotton

There are two distinct areas of Brazil in which cotton is grown. In the northeast (states of Paraíba, Rio Grande do Norte, and Ceará), cotton is a long-established crop of the perennial or "tree" variety. In the southeast, especially the state of São Paulo, large-scale cotton production is relatively new; an annual variety quite similar to U. S. cotton is grown here.⁴ Most of this São Paulo cotton ranges in staple length from 1" to 1-1/16" which compares favorably with the average American Upland fiber in this characteristic.⁵ The perennial cotton of northeast Brazil is of an even longer staple length.

Cotton Production

Cotton production in Brazil has, historically, always been greatly influenced by cotton production in the United States. Thus, when the American Revolution greatly reduced American cotton production, Bra-

* The author wishes to express his appreciation to Dr. Calvin B. Hoover who read critically an earlier draft of this article.

¹ One of the arguments advanced at the Southern Commercial Convention in 1856 for reopening the slave trade was that the resulting lower cost of slaves would enable the South to compete successfully with Brazilian and Indian cotton production. Allan Nevins, *The Emergence of Lincoln*, New York, 1950, I, 438n.

² See, for example, John Tebbel, *George Horace Lorimer and the Saturday Evening Post*, New York, 1948, p. 245. In 1935, the *Post* timed a series of articles emphasizing Brazilian expansion of cotton production for the August and September issues when the size of the American crop would be known. "Lorimer himself was not looking for impartiality; he was intent on making a case against the New Deal AAA."

³ Years refer to the "cotton years" which begin on August 1.

⁴ George Wythe, *Brazil, An Expanding Economy*, New York, 1949, p. 69.

⁵ Benjamin N. Hunnicutt, *Brazil Looks Forward*, Rio de Janeiro, 1945, p. 91.

TABLE 1. COTTON: PRODUCTION, U. S. AND BRAZIL, 1929-1948, QUANTITIES, INDEX NUMBERS, AND PERCENTAGE OF WORLD TRADE

Year Beginning August 1	United States 1,000 Bales ¹	Brazil 1,000 Bales ¹	Index Numbers (Base: 1929-1948)		% of World Total	
			U. S.	Brazil	U. S.	Brazil
1929	14,825	571	117.9	37.5	55.19	2.13
1930	13,932	483	110.8	31.7	53.18	1.84
1931	17,097	555	135.9	36.5	61.39	1.99
1932	13,003	481	103.4	31.6	53.18	1.97
1933	13,047	1,014	103.7	66.7	48.47	3.77
1934	9,636	1,328	76.6	87.3	40.47	5.58
1935	10,638	1,757	84.6	111.5	39.66	6.55
1936	12,399	1,817	98.6	119.5	39.42	5.78
1937	18,946	2,075	150.6	136.5	49.08	5.37
1938	11,943	1,989	94.9	130.8	41.06	6.84
1939	11,817	2,141	93.9	140.8	40.90	7.41
1940	12,566	2,507	99.9	164.9	41.14	8.20
1941	10,744	1,844	85.4	121.3	39.44	6.77
1942	12,817	2,089	101.9	142.8	47.42	8.04
1943	11,427	2,700	90.8	177.6	45.00	10.63
1944	12,230	1,627	97.2	106.9	49.34	6.66
1945	9,015	1,350	71.7	88.8	42.55	6.37
1946	8,640	1,300	68.7	85.5	40.06	6.03
1947	11,851	1,260	94.2	80.2	46.68	4.79
1948	14,877	1,500	118.2	96.7	51.05	5.15

¹ Bales of 500 pounds gross weight.

Sources: Compiled or derived from: U. S. Department of Agriculture, *Agricultural Statistics*. International Cotton Advisory Committee, *Cotton Quarterly Statistical Bulletin*.

zilian production and exports were stimulated.⁶ After the American Revolution, Brazilian cotton-growing went into a decline until the American Civil War virtually stopped U. S. cotton exportation. The impetus gained from this stimulus was lost shortly after the war. After 1871, when Brazil exported 365,000 bales,⁷ there was a steady decline.⁸ The World War I era also was a period of great export activity for Brazil.⁹

Cotton production in Brazil (Table 1) averaged slightly more than 500,000 bales annually for the first four years of the period 1929-1948. From 1933, cotton production increased in every year but one and in 1940, 2.5 million bales were grown—five times the production of 1932. The cotton crops after 1940 were generally smaller except in 1943 when 2.7 million bales were grown. The crop of 1947 was only 1.2 million bales—the smallest crop of any year since 1933. In the last year of the period under study, 1948, cotton production recovered slightly and nearly

⁶ Brazilian Department of Press and Propaganda, *Facts and Information about Brazil*, Rio de Janeiro, 1942, p. 59.

⁷ Unless otherwise indicated, a "bale" refers to the standard statistical bale of 478 pounds net weight, 500 pounds gross weight.

⁸ B. N. Hunnicut, *op. cit.*, p. 86.

⁹ *Ibid.*

1.5 million bales were ginned. Production in 1948 was 97 per cent of the average annual production for the entire 20-year period, 1929-1948.

The rapid increase in cotton production in Brazil between 1932 and 1940 altered Brazil's position in the world cotton picture from that of a minor producer to a major one. This change, contrasted with the usual sluggishness of agricultural adjustments, was an exceedingly rapid one. In 1932, Brazil grew two percent of the world's cotton; in 1933, 3.8 percent; in 1934, 5.6 per cent; in 1935, 6.6 per cent. The change in Brazil's position *vis-a-vis* the United States was even more striking. In 1931, Brazilian cotton production was 3.2 per cent of U. S. production; in 1934, Brazilian production was 13.8 per cent of that in the United States.¹⁰

Brazilian cotton production was above its 20-year average for the 1929-1948 period in every year between 1935 and 1944. During this same 10-year period, production in the United States was above average in only two years, 1937 and 1942, and in only the earlier year was the production figure significantly higher than average.

Both the United States and Brazil experienced a postwar drop in production, and both countries showed a sharp recovery in production in 1948. There appears to be no question that Brazilian cotton production reacted strongly to reductions in U. S. production and to U. S. price-support policies, although, as we shall indicate, these were not by any means the only factors at work in Brazil.

Cotton Acreage

The sharp increase in Brazilian cotton acreage (Table 2) in the late 1930's, when compared with the acreages harvested in the early years of that decade, indicates an ability to shift resources from other agricultural production (or fallow) to cotton, a faculty unusual in other agricultural areas without direct government intervention.¹¹ Between 1932 and 1935, cotton acreage in Brazil tripled.¹² The peak acreage for the entire 20-year period under study was in 1940, when some 6.75 million acres were harvested. This was nearly four times the acreage of just eight years previously. From this peak, acreage dropped sharply in the next year, 1941, and, after moving erratically during the war, showed a downward trend in the last three years of the period. The 4.1 million acres harvested in 1948 was only slightly above the area reported for 1934.

¹⁰ These percentages overstate the case, somewhat, because both acreage and yield were above average in the United States in 1931 and below average in 1934. Brazilian production, however, was higher in 1931 than in the preceding or following year and was considerably lower in 1934 than in 1935.

¹¹ See the writer's article, "Cotton Competition—U. S. and India—1929-1948," *Southern Economic Journal*, XVII, January, 1951, 271-274, for an example of sluggishness in acreage changes in the absence of government intervention.

¹² Interestingly enough, the yield increased 30 percent concomitantly with the acreage increase. (See Table 3.)

TABLE 2. COTTON: ACREAGE HARVESTED, UNITED STATES AND BRAZIL, 1929-1948

Year Beginning August 1	United States (000 Acres)	Brazil (000 Acres)	Index Numbers (Base: 1929-1948)		% of World Total	
			U. S.	Brazil	U. S.	Brazil
1929	43,232	1,726	158.66	38.39	50.04	2.00
1930	42,444	1,694	155.76	37.67	49.53	1.98
1931	38,704	2,000	142.04	44.48	46.90	2.42
1932	35,891	1,703	131.72	38.87	45.67	2.17
1933	29,383	2,851	107.83	63.41	38.54	3.74
1934	26,866	3,981	98.59	88.54	35.51	5.26
1935	27,509	5,054	100.95	112.40	34.58	6.35
1936	29,755	5,193	109.20	115.49	35.04	6.12
1937	33,623	6,010	123.39	133.66	36.26	6.48
1938	24,248	5,666	88.99	126.01	31.74	7.42
1939	23,805	5,889	87.36	130.97	32.65	8.08
1940	23,861	6,740	87.57	149.90	30.91	8.73
1941	22,236	4,942	81.60	109.91	29.54	6.56
1942	22,602	5,180	82.95	115.20	33.09	7.58
1943	21,652	6,200	79.46	137.89	31.80	9.11
1944	20,009	6,000	73.43	133.44	33.42	10.02
1945	17,241	5,000	63.27	111.20	31.56	9.15
1946	17,615	5,500	64.64	122.32	31.05	9.70
1947	21,380	4,500	78.46	100.08	35.81	7.54
1948	22,921	4,100	84.12	91.18	36.41	6.51

Sources: Compiled or derived from: *Hearings on Cotton*, Subcommittee of the Committee on Agriculture, House of Representatives, 78th Congress, second Session, Washington, Government Printing Office, 1945. U. S. Department of Agriculture, *Agricultural Statistics*.

Although the post-war statistics on cotton acreage reveal a definite trend away from further expansion of cotton-growing areas in Brazil, they do not indicate that acreage will return in the near future to the pre-1933 level. The cotton acreage of 1948 would have to be halved before acreage approached that of this earlier period.¹³

Cotton Yields

The yields of cotton obtained in the United States and in Brazil (Table 3) reveal a highly significant divergence since 1944. Until this year, Brazilian yields, though generally below those of the U. S., were not much smaller than U. S. yields. Furthermore, as in the United States, the Brazilian yield had shown a rising trend. Thus yields in the late 1930's were consistently above those of the earlier years of the decade, despite the tremendous increase in total cotton acreage which occurred in Brazil after 1933.

In 1944, however, the yield of cotton per harvested acre in Brazil dropped to about 130 pounds per acre compared with the previous

¹³ The latest estimate available is one by the International Cotton Advisory Committee for the year beginning August 1, 1951. Production (and presumably acreage) is thought to be about that of the 1948 season. I.C.A.C., *Monthly Review of the World Situation*, May 1951, p. 8.

year's yield of 208 pounds per acre. The 1943 yield was the highest of any year of the entire 20-year period of this study but was not significantly above yields in several of the preceding 10 years. For the four-year period, 1944-1947, however, Brazilian cotton yields never exceeded the low 1944 figure. Meanwhile, the U. S. yield, which had been 231 per cent of the Brazilian yield in 1944, dropped somewhat below this latter percentage in the next four seasons but was still 177 per cent of the Brazilian production in 1948. This large increase in U. S. yield relative to the Brazilian yield resulted from both a decline in the absolute yield in Brazil and a rise (in absolute terms) of the U. S. yield.

TABLE 3. YIELD OF COTTON PER HARVESTED ACRE, UNITED STATES AND BRAZIL, 1929-1948

Year Beginning August 1	United States Pounds/Acre	Brazil Pounds/Acre	Brazil as % of U. S. Yield
1929	164.2	158.1	96.29
1930	157.1	136.3	86.76
1931	211.5	132.7	62.74
1932	173.5	135.0	77.81
1933	212.7	170.0	79.92
1934	171.6	159.5	92.85
1935	185.1	166.2	89.79
1936	199.4	167.3	83.90
1937	269.9	165.0	61.13
1938	235.8	167.8	71.16
1939	237.9	173.8	73.06
1940	252.5	177.8	70.42
1941	231.9	178.4	76.93
1942	272.4	192.8	70.78
1943	254.0	208.2	81.97
1944	298.9	129.6	43.36
1945	255.6	129.1	50.91
1946	235.3	113.0	48.02
1947	266.3	133.8	50.24
1948	309.0	174.9	56.60

Source: Derived or computed from Tables 1 and 2.

A number of recent studies have suggested that this fall in yield in Brazil is not a temporary fluctuation, but is rather the result of a basic agricultural error—one familiar to the southeast United States—namely, that "No substantial effort is made to maintain the regenerative power of the soil."¹⁴ Just as, historically, American cotton growers moved westward as the cotton lands along the Atlantic seaboard were depleted, so in southern Brazil especially, cotton lands have been allowed to deplete or erode and new land opened to replace it.¹⁵

This fall in yield, if sustained, may seriously curtail Brazilian interest

¹⁴ Henry W. Spiegel, *The Brazilian Economy*, Philadelphia, 1949, p. 1.

¹⁵ Spiegel, *op. cit.*, p. 183; United Nations, *Economic Survey of Latin America*, 1948, Lake Success, 1949, p. 124.

in large-scale cotton production. Alternative crops are easily possible.¹⁶ In addition, the trend toward industrialization in Brazil will cause a steady drain to the cities of the working force and bring higher wages to the remaining farm labor.¹⁷ Since southern Brazil is in no sense wedded to cotton as are some areas of the United States, if suddenly lowered yields mean unprofitable production of cotton, there will be no strong drag of custom to encourage continued planting of this particular crop.

Cotton Prices

The prices of American and Brazilian cotton (Table 4) showed a close correlation during the 1929-1939 period.¹⁸ During this 11-year period, the

TABLE 4. SEASON AVERAGE PRICE PER POUND OF AMERICAN AND BRAZILIAN COTTON IN LIVERPOOL, 1929-1939

Year Beginning August 1	American- ¹ U. S. Cents Per Pound	Brazilian- ² U. S. Cents Per Pound	Index Numbers (Base: 1929-1939)		Brazilian Price as Percentage of American
			American	Brazilian	
1929	18.44	17.27	151.33	145.80	93.66
1930	11.61	11.36	95.28	95.57	97.84
1931	7.54	7.50	61.88	63.10	99.47
1932	8.52	8.61	69.92	72.44	88.03
1933	12.47	12.28	102.34	103.31	98.47
1934	14.24	13.86	116.86	116.61	97.32
1935	13.50	13.45	110.79	113.16	99.62
1936	14.62	14.12	119.98	118.79	96.58
1937	10.31	10.18	84.61	85.65	98.74
1938	10.15	9.63	83.30	81.02	94.87
1939	12.64	12.49	103.73	105.08	98.81

¹ Middling Fair $\frac{3}{8}$ ".

² Sao Paulo, Fair.

Source: Compiled or derived from: U. S. Department of Agriculture, *Agricultural Statistics*.

price of Brazilian cotton (Sao Paulo, Fair) was just under the price of American cotton (Middling Fair, $\frac{3}{8}$ "). For eight of these 11 years, the season average price of Brazilian cotton fell within 96.6 and 99.6 per cent of the American cotton price. Only in 1932, was there a significantly wider margin between Brazilian and American cotton. In that year, the Brazilian price was 88 per cent of the American price. However, very

¹⁶ In 1943, the Brazilian government began a program to promote diversification especially into food-crops. A. H. W. King, *Brazil*, London, 1948, p. 28.

¹⁷ Some writers on Brazil speak of a chronic labor shortage there. I am indebted to Prof. R. S. Smith for the suggestion that this condition is more a reflection of the native's high propensity for leisure and the social and geographic immobility of labor than an actual paucity of persons of working age.

¹⁸ Price data for the years following 1939 are not considered comparable. World War II and the international trade and foreign exchange distortions which accompanied and followed this catastrophe make price comparisons of the post-war period unreal to a considerable degree. Furthermore, the Liverpool cotton market—the broadest international market for raw cotton—was closed after 1940.

little cotton was exported from Brazil in that year, so no great weight should be given to this deviation from the usual price relationship.¹⁹

The brief history of Brazilian and American cotton prices since the close of World War II illustrates in microcosm the post-war instability of international commodity markets. Exactly comparable price data are not available, but there is sufficient information to determine, with fair accuracy, variations in the price of one cotton relative to the other. Below are the season average prices of U. S. Middling 15/16" cotton in spot markets in this country and of Brazilian Sao Paulo, Type 5, at the port of Sao Paulo:

Season	U. S.		Brazil
1934-35—1938-39	11.18	U. S. cents per pound	11.33
1946-47	34.82	U. S. cents per pound	25.88
1947-48	34.58	U. S. cents per pound	28.44
1948-49	32.15	U. S. cents per pound	33.03

These prices may not be compared directly since they are not adjusted for export taxes (3 per cent ad valorem at Sao Paulo), subsidies, or differences in selling and shipping terms. Conversion from cruzeiros to dollars is based on the International Monetary Fund rates. Despite these limitations, computation of the comparative percentage of Brazilian price to that of the U. S. may serve a useful purpose. These percentages are: 1934/35-1938/39, 101.3 per cent; 1946/47, 74.3 per cent; 1947/48, 82.2 per cent; 1948-49, 102.7 per cent. In the two earlier post-war years, the price of Brazilian cotton (relative to U. S. cotton) was far below that of the pre-war period. Only in the 1948-49 season did U. S.-Brazilian cotton prices resume their pre-war relationship.²⁰

Cotton Exports

The most striking evidence of the manner in which Brazilian cotton moved into the vacuum created by the decline of U. S. cotton production after 1933 is found in the export statistics of the two countries (Table 5). In 1932²¹ and 1933, Brazilian cotton exports were negligible, while U.S. cotton exports were at a height seldom reached in the long history

¹⁹ Near the end of the 1938-39 season, the U. S. Government established an export subsidy of one and one-half cents per pound on cotton exported. N.Y. Cotton Exchange, *Cotton Year-Book*, 1939, New York, 1939, p. 4. This subsidy rose to four cents a pound before the war and has continued since the war, but at a level that has been negligible price-wise.

²⁰ Although outside the time-period of this study, it may be interesting to note that by January, 1951 (immediately before a price ceiling was placed on U. S. cotton) the price of Brazilian cotton was 157.7 per cent of the price of American cotton. Actual prices were 44.20 cents per pound for U.S., 69.71 U.S. cents per pound for Brazilian. After the U.S. price was "frozen," the price of Brazilian cotton went even higher.

²¹ Export statistics are for calendar years.

of American cotton. Between 1933 and 1934, American cotton exports fell by about one-third; Brazilian cotton exports increased tenfold. Brazilian exports, less than one per cent of U. S. exports in 1933, were nearly 10 per cent of the U. S. figure the following year. Brazil exported over one-half million bales of cotton in 1934. In 1936, Brazil exported more than 900,000 bales of cotton, which was slightly more than 15 per cent of U. S. exports in that year. Two years later, in 1938, Brazil exported about one and one-quarter million bales of cotton—more than one-fourth of the

TABLE 5. COTTON EXPORTS, UNITED STATES AND BRAZIL, 1929-1948, QUANTITIES, INDEX NUMBERS, AND PERCENTAGE OF WORLD TOTAL

Calendar Year	United States 1,000 Bales ¹	Brazil 1,000 Bales ²	Index Numbers (Base: 1929-1948)		% of World Total	
			U. S.	Brazil	U. S.	Brazil
1929	8,127	225	165.00	30.61	51.73	1.43
1930	7,159	140	145.35	19.04	49.76	.97
1931	7,535	96	152.99	13.06	53.60	.68
1932	9,817	2	199.32	.27	66.43	.01
1933	9,229	54	187.38	7.35	61.27	.36
1934	6,336	583	128.64	79.30	45.87	4.22
1935	6,453	639	131.02	86.92	45.91	4.55
1936	5,912	924	120.03	125.69	40.43	6.32
1937	6,349	1,089	128.91	148.13	41.97	7.20
1938	4,787	1,239	97.19	168.54	37.47	9.70
1939	5,030	1,492	102.13	202.95	38.59	11.45
1940	4,008	1,034	81.38	140.65	42.40	11.94
1941	1,260	1,330	25.58	180.91	18.49	19.52
1942	1,114	710	22.62	96.58	25.70	16.88
1943	1,442	360	29.28	48.97	37.10	9.26
1944	1,042	496	21.16	67.47	28.78	13.70
1945	2,645	759	53.70	103.25		
1946 ³	3,544 ⁴	1,524	71.96	207.30	36.96	15.89
1947 ³	1,968 ⁴	1,054	39.96	143.37	22.67	12.14
(p) 1948 ³	4,748 ⁴	953	96.40	129.63	44.10	8.85

(p) Preliminary.

¹ Bales of 478 pounds net weight, 500 pounds gross weight.

² Bales of 478 pounds net weight, 500 pounds gross weight.

³ Year beginning August 1.

⁴ Running bales.

Sources: Compiled or derived from: International Institute of Agriculture, *International Yearbook of Agricultural Statistics*; International Cotton Advisory Committee, *Quarterly Bulletin of Statistics*.

amount exported by the United States in that year. Brazilian cotton exports in 1938 were 25 times as great as in 1933; U. S. exports of cotton in 1938 were hardly more than one-half the volume shipped abroad in 1933.

That Brazil became virtually overnight an important factor in the world cotton market of the late 1930's is equally evident from the relative positions of the United States and Brazil in that market. In 1933, when U. S. cotton exports constituted 61.3 per cent of the world's total cotton

exports, Brazilian exports constituted only one-third of one per cent. By 1938, however, U. S. cotton exports had fallen to only 37.5 per cent, while Brazilian exports were nearly 10 percent of the world total. In 1941, with world trade generally distorted by the war, Brazil's cotton exports actually comprised a larger percentage (19.5) of the world's total than did U. S. cotton exports (18.5 per cent). This situation has never been repeated.

The impact of Brazilian cotton exports on U. S. markets abroad probably was felt to be even more serious than was the actual case because these exports were concentrated in particular markets. The prime example of such concentration was Germany. In 1933, German imports of Brazilian cotton were negligible. In 1934 they totaled 38,000 bales, and in 1935 the total had risen to 380,000 bales. Meanwhile, imports of U. S. cotton by Germany fell by 1.1 million bales in the same three-year period.²² Brazil's exports to Germany in 1935 constituted better than one-half of her total cotton exports, although German imports of cotton from all sources comprised only 11.5 per cent of all the cotton exported by producing countries in that year.²³ This concentration of Brazilian exports in Germany at the beginning of Brazil's entry into the world cotton market on a major scale reflects the German desire to conserve dollar exchange, the Brazilian willingness to barter, and the similarity of American and Brazilian cotton. This latter factor simplified the substitution of Brazilian for American cotton. The United States, on the other hand, had refused a barter agreement on cotton with Germany.²⁴

It seems likely that this concentration of Brazilian exports in what had been a prize American market, coupled with the over-all decline of German cotton imports in these years, made Brazilian competition appear more serious than was actually the case. Brazil's total cotton exports in 1935 were only 4.5 per cent of the world total.

Table 6, which gives a detailed breakdown of Brazilian exports by destination, indicates several other cases of concentration, particularly Japan.

After World War II, Brazilian cotton exports, reflecting both lower cotton production in Brazil and higher consumption by Brazilian mills, fell off rapidly. In 1948 (year beginning August 1), exports totaled about 950,000 bales—one-half million bales less than the 1939 total—and Brazil's share in the world market fell from 15.9 per cent in 1946 to 8.9 per cent in 1948.²⁵

²² Caroline C. Gries, *Statistics Relating to International Trade in Cotton and Linters, 1921-1935*, Washington, 1936, p. 36.

²³ *Ibid.*, pp. 8, 22, 38.

²⁴ L. B. Bacon and F. C. Schloemer, *World Trade in Agricultural Products*, Rome, 1940, p. 404.

²⁵ In the 1949-50 season, Brazilian exports were only 5.3 per cent of the world total. International Cotton Advisory Committee, *Monthly Review of the World Situation*, January-February, 1951, p. 11.

TABLE 6. BRAZIL: EXPORTS OF RAW COTTON BY COUNTRY OF DESTINATION 1929-49 BALES (478 POUNDS NET)

Calendar Year	Gr. Bri.	France	Portugal	Germany	Holland	Belgium-Lux	Italy	Japan	Spain	China	Other	Total
1929	191,577	6,890	11,927	9,178	4,817	397	3	—	—	—	453	224,742
1930	86,343	10,959	14,095	20,077	7,296	1,481	—	—	—	—	43	140,284
1931	65,610	8,348	8,583	9,201	2,126	1,836	—	—	—	—	132	95,836
1932	814	51	904	609	—	—	—	—	—	—	0	2,375
1933	43,582	3,362	3,127	1,808	5	1,674	—	374	—	—	0	53,930
1934	305,973	51,919	31,626	98,894	24,205	39,060	19,989	7,322	484	—	2,790	583,662
1935	119,637	49,184	13,772	379,716	21,751	27,249	12,633	11,494	18	—	3,932	639,386
1936	303,578	69,007	10,746	190,958	31,432	37,903	41,219	199,836	101	9,653	29,450	923,883
1937	218,294	58,616	33,766	390,863	22,692	28,213	36,837	234,843	—	19,667	46,117	1,089,308
1938	232,675	137,208	23,383	377,290	32,816	34,591	42,363	277,464	—	34,794	46,795	1,239,379
1939	220,725	153,908	21,991	300,797	53,884	33,466	61,955	358,565	—	221,523	65,114	1,492,218
1940	246,350	—	—	—	—	—	—	296,069	52,182	192,332	247,416	1,034,349
1941	175,336	—	—	—	—	—	—	244,510	32,082	170,295	707,347	1,329,570
1942	151,492	—	—	—	—	—	—	—	256,917	—	301,664	710,063
1943	163,972	—	—	—	—	—	—	—	87,917	—	107,685	359,574
1944	222,883	—	4,525	—	—	—	—	—	55,858	—	213,239	496,455
1945	443,624	—	7,439	—	23,416	—	28,296	—	66,812	30,011	186,913	758,500
1946	433,913	44,973	3,971	—	59,414	142,807	302,785	—	163,446	235,585	240,060	1,626,954
1947	264,471	104,683	11,235	—	81,645	110,614	98,484	—	172,352	109,013	364,154	1,316,651
1948	298,569	94,282	10,179	2,869	45,268	98,927	118,095	2,292	178,145	22,175	322,143	1,193,184
1949	271,219	30,500	28,286	553	5,848	1,536	789	—	95,329	231	210,302	644,593

Source: Derived from statistics furnished by Brazilian Government Trade Bureau.

Coffee and Cotton in Brazil

Increases in cotton production in Brazil in the 1934-1940 period can readily be correlated with decreases in production in the United States and one is tempted to draw the conclusion that this was a simple case of cause and effect.²⁶ Thus the statement that governmental acreage controls and price supports in the United States caused the increase in Brazilian cotton production is usually unchallenged. But we should not

TABLE 7. COFFEE AND COTTON IN BRAZIL, ACREAGE AND PRICES, 1929-1948

Year	Coffee 1,000 Acres	Cotton 1,000 Acres	Cotton Acreage as % of Coffee Acreage	Coffee Prices U.S. Cents/ Pounds	Cotton Prices U.S. Cents/ Pounds	Index No. Cotton Coffee
1929	8,244	1,726	20.94	16.08	15.52	100.00
1930	8,528	1,694	19.86	10.30	10.03	100.89
1931	9,024	2,000	22.16	8.93	8.99	104.31
1932	9,813	1,703	17.35	10.44	14.31	142.03
1933	9,786	2,851	29.13	10.26	11.48	115.94
1934	8,545	3,981	46.59	10.03	13.84	142.98
1935	8,797	5,054	51.59	8.72	12.17	144.61
1936	8,555	5,193	60.70	10.94	12.95	122.65
1937	8,550	6,010	70.29	8.57	9.26	111.96
1938	7,517	5,666	75.38	7.50	8.42	116.33
1939	6,489	5,889	90.75	7.24	9.04	129.38
1940	5,876	6,740	114.70	8.60	6.91	83.26
1941	5,372	4,942	92.00	13.34	8.42	65.40
1942	5,785	5,180	89.54	13.38	11.08	85.80
1943	5,629	6,200	110.14	13.38	13.15	101.83
1944	N.A.	6,000	—	13.38	14.10	109.19
1945	5,886	5,000	84.95	N.A.	17.93	
1946	5,945	5,500	92.51	25.21	25.88	106.37
1947	5,968	4,500	75.40	26.95	28.44	109.35
1948	6,089	4,100	67.33	26.92	32.98	126.94

N.A.—Not available.

lose sight of the fact that extremely low prices of coffee relative to cotton (Table 7) existed during this period. These low coffee prices persisted, moreover, despite strenuous coffee price-support efforts by the Brazilian government. To the Brazilian agricultural producer who planted cotton between the rows of his coffee trees it may well have seemed that it was the low price of coffee rather than the relatively high price of cotton that forced him into cotton production.

The history of coffee-growing in Brazil is a long one, reminiscent in several respects of the history of cotton-growing in the United States.²⁷ Government intervention in the coffee market occurred as early as 1906.²⁸

²⁶ See, for example, Henry I. Richards, *Cotton and the AAA*, Washington, 1936, pp. 273-274.

²⁷ A brief outline history of Brazilian coffee-growing may be found in: International Institute of Agriculture, *The World's Coffee*, Rome, 1947, pp. 188-193.

²⁸ Brazilian Department of Press and Propaganda, *op. cit.*, p. 57.

By 1924, governmental price-support policies had taken on a permanent aspect. During the next 14 years, the famous "valorization" scheme governed the Brazilian coffee market.²⁹

Two earlier "valorization" plans in 1906-1913 and 1917-1924, proved successful even though they involved no restrictions on coffee production. These first operations were of an "ever-normal granary" type. The government (either the Brazilian national government or the state of Sao Paulo) purchased and stored coffee during high-production years in order to maintain satisfactory prices. These surpluses were sold off in years of especially low production or high consumption. The "valorization" scheme begun in 1924, however, resulted in the accumulation of large stocks of coffee by 1929, when the world-wide depression further aggravated the problem of over-production. Furthermore, the policy of maintaining prices without restricting production had led over the years to the extension of coffee-producing areas, both in Brazil and in other coffee-growing countries.

The cumulative effect of the developments described above led, in 1931, to the policy of destroying part of the coffee surplus. In addition, for the first time, an effort was made to restrict production by placing a five-year tax on coffee trees on new plantations.³⁰ These general policies of price support, destruction of surpluses, and production restrictions were continued until 1937. Thus, they were in effect during the period when the U. S. Government was maintaining price supports and production restrictions on cotton. After 1937, although some destruction of coffee occurred, Brazil began to compete vigorously for a larger share of the world market.

Changes in the acreage devoted to cotton and coffee in the state of Sao Paulo during this period indicate the rapidity of the shift from coffee to cotton production:

Year	Cotton	(1,000 Acres)	Coffee	Cotton as % of Coffee
1932	257		5,565	4.6
1933	437		5,696	7.8
1934	971		4,465	21.7
1935	1,497		4,915	30.5
1936	2,427		4,735	51.3

Source: International Institute of Agriculture.

²⁹ An excellent description of the operation of this scheme may be found in *The World's Coffee*, op. cit., pp. 471-477. The description in the text follows this reference.

³⁰ According to P. K. Norris, *Cotton Production in Southern Brazil*, Washington, 1939, there was a legal prohibition on the planting of new coffee trees after 1930. But *The World's Coffee*, op. cit., p. 477, gives June, 1935, as the date a resolution to this effect was approved by the Annual Congress of Coffee-Growing States. The latter work makes no mention of any earlier law.

Since it is known that cotton was often planted between rows of coffee trees, the statistics on coffee acreage may not reflect accurately the shift in emphasis from coffee to cotton. In any event, the tenfold increase in cotton acreage within a five-year period could not have been accomplished without a considerable reduction in the resources applied to coffee production. This would be brought about, if for no other reason,³¹ because of the under-populated condition of Brazil.

Perhaps the most instructive view of the position of cotton in the Brazilian economy is furnished by an authoritative work on coffee:

An examination of the agricultural economy in the State of Sao Paulo during the past half-century shows, indeed, that during periods of slump in coffee, the cotton crop has been increased to remedy the situation. Thus in 1888, when the abolition of slavery seriously upset coffee growing, more cotton was planted. Again, after the great frost in 1919, which caused very serious damage to the coffee plantations, the cotton crop was increased and planted on a large-scale between the rows of coffee plants. In 1920, the State of Sao Paulo had become the principal cotton producing centre in Brazil. Cotton was again called upon to stem the tide of the last depression caused by over-production of coffee.³²

The future of Brazilian cotton production is, therefore, intimately connected with the future demand for coffee by the world's coffee drinkers. As long as the world, and especially the United States, enjoys full employment and prosperity, consumption of coffee can be expected to remain far above that of the 1930's, even though the price of coffee is relatively much higher than in the earlier period. Such conditions will tend to discourage the spread of cotton-growing in Brazil and is likely to lead to attrition of the present cotton-growing areas.

American thinking, especially in the "Cotton South," has been long accustomed to grant cotton primacy. It is, therefore, only by a real mental effort that one adjusts to the idea that to Brazil, especially southern Brazil, the expansion of cotton-growing in the 1930's was largely a by-product of the coffee crisis. In 1949, the year this study concludes, the last of the stocks of coffee accumulated under the program begun in 1930 were liquidated.³³ The elimination of these stocks placed Brazil's coffee industry on a sounder economic basis than had existed for a quarter-century. In such circumstances, it is difficult to conceive of any significant further displacement of coffee by cotton in the Brazilian economy.

Brazilian Cotton Textile Industry

The cotton textile industry was the first industry of significant size to be

³¹ See P. K. Norris, *op. cit.*, pp. 14-15.

³² *The World's Coffee*, *op. cit.*, p. 199.

³³ U. S. Department of Commerce, *Economic Review of Brazil*, 1949, Washington, 1950, p. 5.

established in Brazil.³⁴ By 1929, there were 347 mills in Brazil producing cotton textiles and production had reached 630 million meters of cloth.³⁵ Consumption of raw cotton by Brazilian mills was probably about 200,000 bales in that year. In the early 1930's, production of cotton textiles reached one billion meters with a raw cotton consumption of about 350,000 bales.³⁶ By 1938, cotton consumption was 642,000 bales.³⁷ The war gave the Brazilian industry a great impetus, both in producing for the domestic market now that foreign supplies were largely cut off and in producing for export. In the war years, exports ranged between 20,000 and 26,000 metric tons annually.³⁸

In 1946, the peak year of the post-war period, there were 423 cotton textile mills in Brazil containing slightly less than three million spindles.³⁹ About 900,000 bales of cotton were consumed in that year by Brazilian mills.⁴⁰ In 1948, the last year of the period under study, raw cotton consumed amounted to 875,000 bales.

Thus, in 20 years the domestic requirements of raw cotton have increased nearly three-quarters of a million bales annually. This is a fact of obvious significance for the future of Brazilian production and export of raw cotton.

Conclusion

Brazil sporadically has been a sizeable producer and exporter of cotton for over 100 years. In 1933, a particular conjuncture of economic conditions brought Brazil into the cotton-producing and cotton-exporting field on a very large scale relative to its position immediately prior to 1933. The major economic reasons for this resurgence were:

1. The accumulation in Brazil of very large stocks of coffee.
2. The sharp fall in the price of coffee after 1929 relative to the price of cotton (even though the latter price fell also). U. S. government cotton price-support policies were, of course, an important factor in this price situation.
3. Brazilian governmental restrictions on the planting of new coffee trees.
4. The necessity, because of the reduced foreign exchange proceeds from coffee, of substituting an *exportable* crop for coffee.

Certainly, it would not make sense to deny that the U. S. agricultural program after 1933 had considerable influence on the Brazilian decision

³⁴ King, *op. cit.*, p. 20.

³⁵ S. H. Steinberg, ed., *The Statesman's Year-Book*, New York, 1931, p. 703.

³⁶ D.I.P., *Facts and Information about Brazil*, p. 77.

³⁷ I.C.A.C., *Cotton Quarterly Statistical Bulletin*.

³⁸ *Statesman's Year-Book*, *op. cit.*, various years.

³⁹ *Ibid.*

⁴⁰ I.C.A.C., *op. cit.*

to shift a portion of their agricultural resources from the production of coffee to that of cotton. On the other hand, it would be equally erroneous to suppose, as many persons in the United States did suppose, that the U. S. program was the sole cause of the Brazilian shift to cotton.

Of more immediate interest are the prospects for future competition between Brazil and the United States in the world's cotton markets. Spiegel concludes (1949) that Brazil will not emphasize cotton exports in the immediate future for the following four reasons:

1. Brazil does not want to put herself in the position of a strong competitor of the United States in cotton. Her reason for this reluctance is political, not economic. The present foreign economic policies of the United States are such that it may well advantage a country desiring dollar exchange not to antagonize politically important U. S. interests.

2. The excessive labor requirements of cotton production (as long as farming is unmechanized) make it a crop that is not well-suited to a nation endeavoring to industrialize.

3. Despite Brazil's vast land area, much of which is unfarmed, there are physical limits of both area and productivity so far as cotton production is concerned.

4. Labor costs, as a result of the situation described in (2) above and of the growing power of labor, are high and may be expected to go higher.⁴¹

To the limiting factors on cotton expansion described above, we might add the probability that coffee production relative to cotton-growing will become more and more profitable if the world and especially the United States enjoys a reasonably high level of employment and prosperity. The post-war experience suggests that coffee consumption will expand, but cotton consumption may not due to the introduction of new artificial or synthetic fibers and the increasing consumption of known substitute fibers, especially rayon.

Finally, so far as cotton exports (as opposed to cotton production) are concerned, the growing Brazilian cotton textile industry can be expected to absorb larger quantities of domestic cotton, leaving correspondingly smaller amounts available for export out of any particular year's crop. The net effect of this development on the foreign market for American cotton will depend upon the extent to which Brazilian cotton textile manufacture merely replaces imported cotton textiles. If the growth of a domestic cotton textile industry leads to an increase in total consumption of cotton by Brazil, the American cotton farmer will, of course, be indirectly benefited.

Just as the factors discussed above tend to establish maximums beyond which Brazilian cotton production and exports are not likely to go in the foreseeable future, so the needs of the Brazilian cotton textile industry tend

⁴¹ *Op. cit.*, pp. 182-183.

to furnish a minimum below which cotton production in Brazil is not likely to fall. In the world of the immediate future, no nation is likely to accept a shift from a net-exporting to a net-importing position in the basic raw material of its most important industry. The spirit of nationalism would be a sufficiently compelling reason for confidently predicting such a minimum of domestic production, but in Brazil's case, the pressure on its foreign exchange supplies is so great it is inconceivable that the government would stand idly by if cotton-produced fell below cotton-consumed.

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THE NATURE OF THE AGGREGATE SUPPLY OF AGRICULTURAL PRODUCTS

CONRAD GISLASON
Chicago, Illinois

TO THE youth who has trudged the wheatlands of the Great Plains from seedtime to harvest in the performance of the associated crop production tasks, the classroom exposition of adjustment of output to price has an unrealistic tone. In such an area where wheat is the main crop, a quarter section of cropland may receive almost a fixed pattern of cultivation from year to year which is unchanged in response to the change in the price of wheat. The exposition of the law of diminishing returns is in almost every instance couched in terms of acres of land and inputs of labor. In his first brush with economic theory, this adds to the feeling of unrealism our student may experience. This does not mean that for this there does not exist an economic rationale.

Taking almost a specific example, it is possible to set up as an economic model a farm in the spring wheat area in which the tasks and the inputs of variable factors have changed little from 1932 to the present time. In ruling out technical innovation from our model, we may be forced to agree to use improved seed and machinery before it was available. This violation of the chronological sequence of time may be small, yet it should permit us to remain a great deal closer to actuality than is generally the case in economic discussion. We will ascribe to the farmer-operator all the attributes of economic man. The period stipulated witnessed great changes in prices and costs affecting the farmer. We can maintain, however, that our farmer maximized his economic returns although his actions seemed to indicate that price changes had no effect upon him.

The reaction of agricultural production to price changes has been given various interpretations. Brewster and Parsons have questioned the responsiveness of farmers to price changes in terms of a lack of orientation in this direction.¹ Galbraith and Black have emphasized the large overhead costs in farming as opposed to variable costs as the cause of the inelastic output.² Johnson has pointed out the shift in the supply function of factors which face the farmer as the cause of inelasticity.³ These three

¹ John M. Brewster and Howard L. Parsons, "Can Prices Allocate Resources in American Agriculture?" *This Journal*, Vol. XVIII, November, 1946, pp. 938-960.

² J. K. Galbraith and J. D. Black, "The Maintenance of Agricultural Production during Depression. The Explanations Reviewed," *Journal of Political Economy*, Vol. XLVI, June, 1938, pp. 305-323.

³ D. Gale Johnson, "The Nature of the Supply Function for Agricultural Products," *American Economic Review*, Vol. XL, September, 1950, pp. 539-564.

articles shed light on the subject but do not supply the final answer.

In the final analysis, the last two articles are quite similar in their approach. Both base their explanation of the inelastic supply of farm commodities upon the fact that the supply of the variable factors of production tend to be very inelastic in a depression. Galbraith and Black discuss this problem in terms of the large over-head costs in farming. Johnson deals with the problem in terms of shifts in the supply curves of the variable factors. The variable factors associated with land in the production of farm commodities must bear a substantial share of the reduction in the price of farm commodities. This may not be a necessary condition. This approach fails to explain the notoriously inelastic supply of farm commodities when prices move upward into areas in which the supplies of factors become relatively elastic. The supply condition of the factors of production is a very important consideration when the behavior of the output of any industry is being studied. The nature of the demand for these factors, as it is affected by the changing price of the product, may be of equal importance. Our purpose in this paper is to give more adequate consideration to the demand for the factors of production as it affects the aggregate supply of agricultural products. It is necessary, therefore, to give some consideration to the nature of the production function, since this underlies the demand for productive services.

Optimum Point of Production

The law of diminishing marginal returns was first derived in application to agriculture. The additional application of capital and labor to a given area of land will, with given techniques, yield decreasing returns to the total product. The full force with which this law applies to land has not been fully realized. Once the point of diminishing marginal returns is passed, there is a second point beyond which the application of labor and capital yield extremely meagre returns. This point we shall call the "optimum point of production." This point is conceived in a strictly physical sense. The point of maximum physical output may or may not be close to the "optimum point of production." This depends on the rapidity with which marginal physical returns approach zero. The necessary postulate at this point is that beyond the "optimum point of production" the marginal output is low. The "optimum point of production" may not be a point as such; but rather a range of quite short duration. It is not economical in general to apply variable factors beyond this point of "optimum production" because of the very steep rise of the marginal cost curve.

Figure 1 shows the point of diminishing marginal returns X_0 and the "optimum point of production," X_1 . In our model, given the techniques with which we must work and given the amount of rainfall, there is a method of production which will give such returns that, whether or not

the application of labor and capital in the form of cultivation, fertilizer, or seed is doubled, it is impossible to vary the output by more than two or three bushels. Further, to estimate whether or not the extra application increased or decreased the yield is very nearly impossible. To go beyond this point X_1 will not result immediately in a loss. It is at this goal, where marginal costs begin to rise very steeply, that most farmers aim in their productive efforts. Whether or not a farmer attains this point in production depends on his ability as a farmer. If the marginal cost curve is of this nature, it is easily seen that a farmer, like any efficient entrepre-

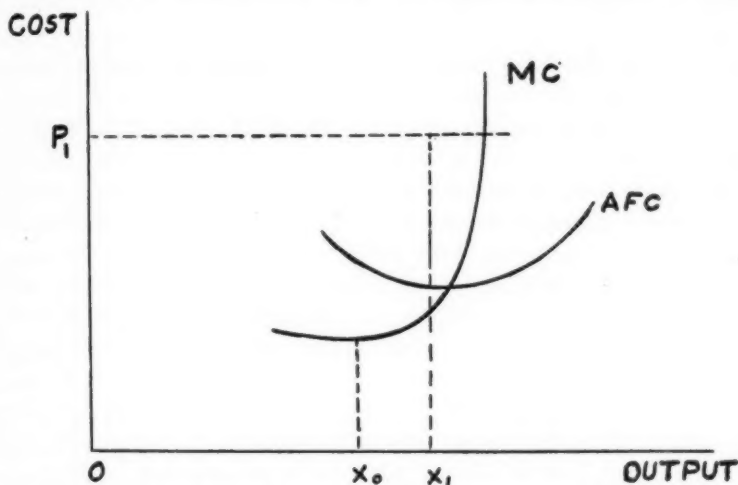


FIG. 1. Land is held fixed in quantity. X_0 is the point of diminishing returns. X_1 is the "optimum point of production" beyond which the marginal costs rise very rapidly. Carrying production beyond X_1 would add relatively little to total returns and weather uncertainty would make this rather unpredictable.

neur, roughly equates marginal costs and marginal revenue even though output remains stable and costs and return vary.

Strange as it may seem to the economist, the essence of farming is not the application of labor and capital to land. The essence of farming is the performance of tasks directly related to the cultural practices involved in the production of crops or livestock. Many of these tasks have changed little from the days of the Pharaoh in the Nile Valley to the farmer of 1951 on a corn belt farm in the American Mid-West. The preparation of the seed bed, the sowing of the grain, the tending of the growing crop, the harvest and the fallow field give rise to functions and tasks which are still fundamental in the production of food. Technology has in many cases, changed these tasks beyond recognition. But it is generally true that the decision to produce a crop or a livestock product involves the decision to perform a sequence of tasks, all of which must be performed,

or none at all. Variation in the output of agriculture with given techniques seldom comes about through variations in the application of the variable factors, i.e., labor and capital. Rather, increased output comes as a result of improved techniques. This shifts the supply curve of agricultural output. These shifts of the supply curve are of an irreversible nature. This does not, of course, preclude a more intensive use of labor or capital in their various forms as a response to price changes. The variation in agricultural output, however, as a result of variation in the use of the variable factors is small and can hardly be recognized, as such, due to the uncertainty to which agriculture is subjected by the variability of the weather.

It may be that the tasks in connection with production are necessary up to the "optimum point of production." Perhaps the number of these tasks may not be reduced without dropping the whole enterprise. If they are adequately performed, the "optimum point" may be reached. Thus these tasks can not be reduced materially in their factor requirements, and an increase in the application of the variable productive resources may not increase output very much. This states essentially that the adequacy in the performance of the tasks is important but this adequacy may have a rather strict meaning. The timeliness in the sequence of tasks often affects output without affecting costs. The weather and the biological processes involved become important factors here. They limit rather narrowly the period in which a task may have to be performed to obtain the greatest returns. The skill of the farmer is very important. A wiser use of the resources at hand will often bring forth greater returns than additional application of resources.

There are two phases of the supply of farm commodities that need to be considered. There is the response of the whole agricultural sector as it expands and contracts to price changes. Land changes from marginal to submarginal as a result of price changes. This is the extensive margin of cultivation. A certain type of agricultural production becomes profitable or loses its profitability due to changes in the price of the product. The extensive margin of crops changes as relative price changes occur among farm commodities. There is also the intensive margin of cultivation. This refers to the application of more or less capital and labor to productive processes which are already being conducted. This refers to the question, "Do farmers use more labor in the operations of growing wheat on the same acreage if the price of wheat rises?" The concern here for the most part is with the intensive margin.

We have been trying to explain why agricultural output does not decrease as prices of farm products fall, rather than the question of why large areas do not become submarginal in depressions. Large overhead costs and shifting supply curves of the variable factors do much to clear

up the latter question as to the constancy of the extensive margin. Doubt may remain as to the adequacy of these explanations in relation to the constancy of the intensive margin, or why farm output is maintained undiminished in a depression. Even if the marginal cost curve in Figure 1 shifts downward in a depression, the downward shift may not be sufficient to keep in step with the price of the product. This becomes more and more unlikely if the marginal cost curve is elastic, since the price must cut the marginal cost curve at the same input of factors. A small variation from this point results in a considerable change in the quantity of factors used.

It is possible to postulate a range of indeterminacy in marginal costs. Weather uncertainty prohibits a close adjustment of marginal cost to marginal revenue. The cost of a marginal operation may be well-known but the physical returns of that operation will not be known. Therefore the cost of a unit of output is unknown. It is in general worthwhile to bring the level of a task up to the point where its purpose has been fulfilled; beyond this point the marginal return of each additional operation becomes very much in doubt. Thus up to the "optimum point of production," the returns will be adequate to pay for each additional operation since each will bring large increases in returns. Beyond this point the marginal returns become uncertain. Extra operations can be thrown in for good measure in many cases without risk of loss with the knowledge and satisfaction of a task well done. Thus agricultural production can absorb additional factors whose costs are covered but which do not increase the profitability of the farm, should the farmer wish to push beyond the point of "optimum production." Thus, during a depression, agriculture absorbs large quantities of labor without a very marked increase in output. There may be a question as to whether the labor was under-employed or used in unprofitable secondary enterprises or used in gardening and non-market functions related to the home. But it did not materially increase the yield-per-acre of wheat in our model.

It may be well to exclude irrigation farming from the category in which the "optimum point" applies. Crop production enters our classification in its various other forms. Range areas each have their carrying capacities and output is not highly elastic for any given time interval. Secondary or supplementary enterprises in farming may be subject to extension. Feed grains may be looked at from the standpoint of capital input. However, these types of enterprises are comparable with industrial production since they can easily be extended or reduced in scope. Feed grains, however, can also be classified in our category because for any given unit of feed, its conversion into livestock products is very narrowly circumscribed. The amount of feed grains converted into livestock products or the amount of feed grains produced is not fixed as rigorously as total crop production

since it is possible to change from one type of production to another in many areas. But if the amount of land devoted to any specified feed grain were fixed, or if by some other method the amount of grain devoted to the production of any one livestock product were limited, the point of "optimum production" would become a real and limiting factor.

This, we also suggest, holds for the application of fertilizer. This can also be shown to be true in regard to feed supplements for various types of livestock. It is in this area of livestock feeding and production of livestock products that the point of "optimum production" has less impact in agriculture since the scale of the enterprise can be readily adjusted. The rate and amount of feeding may be varied in accordance with returns or the optimism of the farmer. Capital rationing may be an important element at this point.

Entrepreneurial Functions of the Farmer

This production relationship has certain definite implications for entrepreneurship in agriculture. The farmer's technical skill and knowledge becomes important as it determines to some degree the extent to which he is able to influence the "optimum point of production" in farming. The "technological-livelihood frame of mind" becomes perhaps more important than the "business-like frame of mind."⁴ These two attitudes or aptitudes are just as likely to appear in the same individual as separately. The predominance of one over the other is not necessary on a psychological basis. The nature of farming may be such as to place more emphasis on one attitude than the other.

Under perfect competition, the success of the entrepreneur is generally considered to depend on the skill with which he combines the factors of production to bring forth his product since he is unable to influence prices. This is no less true in agriculture. The quantity of capital and labor required may not be subject to much variation but the quantity of product resulting from given resources may be influenced by the entrepreneur's ability. It is for this reason that the "technological-livelihood frame of mind" is so important and so dominant in agriculture.

Farming success depends on a further ability of the farmer in areas in which a combination of enterprises are possible and the main farm enterprise may not have a large advantage over other competing enterprises. Price ratios of the various products become important here. These price ratios determine which product will be the most profitable in any given area. The farmer's ability to adjust and alter his production to changes and expected changes in farm prices will in part govern his returns. The farmer's ability to combine enterprises which are profitable and which make full use of his resources becomes important. The farmer will attempt

⁴ Brewster and Parsons, *op. cit.*

to maximize his physical production within the restraint of his resources and within the "point of optimum production." The accusation has been leveled that farmers ignore marginal costs. Because of the nature of the cost curve in agriculture, farmers are unable to make fine adjustments in output. They do have, however, an intuitive feel for maximizing returns and there is no evidence to indicate that as a group they violate this principle.

That farmers tend to maximize returns within the framework of prices, production costs, and techniques can be accepted as an accurate statement. How else can the technological advance in commercial agriculture be explained? The advance of technology in agriculture has consisted for the most part of substituting labor-saving machinery for labor and

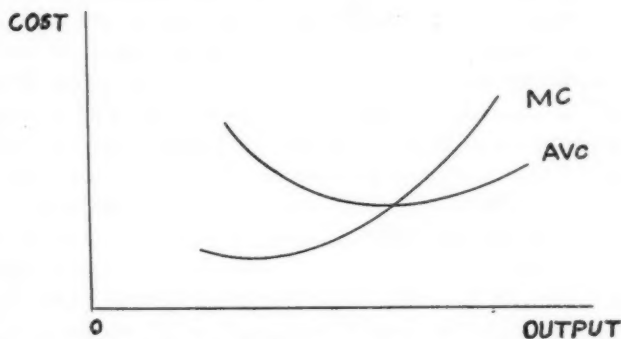


FIG. 2. The cost curves with entrepreneurship fixed for the farmer or for an industrial firm. Land, capital, and labor all are variable.

introducing improved plant and animal varieties. The latter has been more or less automatic through research work of colleges and experimental farms. The first has depended on the availability of capital. Capital rationing in agriculture plays an important role in delaying improved techniques which are introduced more rapidly in periods of rising prices. It is in such periods that the liquidity position of farmers improves, and production increases through new techniques. The role of the entrepreneur enters here. It seldom may pay to pioneer a new technique. But once it has been proven, the sooner a new technique is adopted the longer the farmer will enjoy the benefits of lowered costs.

The scale of operation is also a very important factor in farming success. The farmer has one productive service fixed within himself. It is in his interests to maximize the returns to entrepreneurship. So far we have been considering the intensive margin. The land area available to the farmer was considered fixed. If land becomes a variable factor then the extensive margin of cultivation must be considered. Figure 1 no longer is the relevant diagram.

As is shown in Figure 2, the cost curves becomes much flatter and more horizontal. When land is added to the farming unit, labor and capital are adjusted in relation to it. Machinery is added in size and quantity so that the farmer can attain the "optimum point of production" for the land area as a whole. This phase of entrepreneurship provides an additional challenge to the farmer.

Demand for Productive Services by Agriculture

Are the concepts of an "optimum point of production" in agriculture and the capital rationing which exists sufficient to explain the behavior of agricultural output? The explanations based on high overhead costs or on inelastic supplies of labor and capital when agricultural prices fall are essentially the same. When farm prices fall, the demand for those factors falls but the inelastic supply offsets the tendency to use them in smaller quantities. This factor, together with the lack of opportunities for labor elsewhere in the economy, may help to explain why agricultural output does not fall off in a depression. These approaches fail to explain why agricultural output is inelastic when prices rise and when the demand for the services of the factors of production should also rise. By the same reasoning, the supplies of labor and capital must be inelastic at relatively high prices or the analysis will not hold. If this were not the case, agricultural output would increase after prices of agricultural commodities rose above a certain level. Empirically this does not hold. The supply function of agricultural products is inelastic for all price ranges. If we return to our model, the wheat farm on the Great Plains, we will see that output and the demand for labor and machinery did not change in any fashion throughout the wide shift in farm prices, if we set aside new technology in capital form. It is our contention that inelastic supply of labor and capital is not necessary to explain the inelastic output of agriculture. It may be helpful as an explanation in certain phases of the business fluctuations, but in other phases it is in direct contradiction to fact. It is our contention that the inelastic supply of land, coupled with the nature of agricultural output when transcribed into demand for factors of production, is the explanation closest to the truth.

We have in essence postulated a very inelastic demand schedule for variable inputs of labor and capital in relation to land. We have not postulated fixed coefficients of production. There is also an element of uncertainty in the marginal product of labor and capital which prevents precise adjustment in relation to land. This uncertainty or slack accounts for the fact that agriculture is able to absorb additional labor inputs during depression without definite and clearly indicated loss and without a marked increase in output. In the absence of capital rationing the supply schedule of labor and capital may shift considerably without affecting

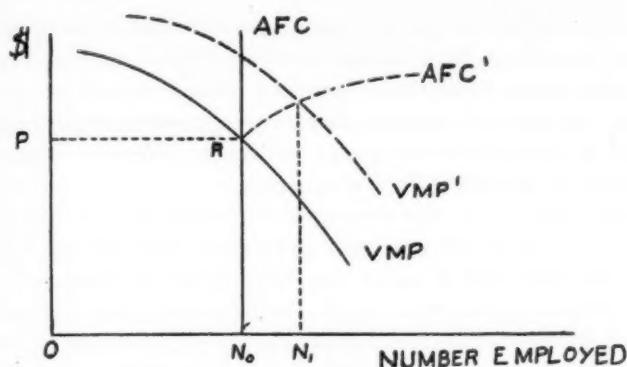


FIG. 3. Labor is fixed as overhead cost. Its supply can be considered to have zero elasticity for the curve AFC, the average factor cost. The demand for labor inputs VMP represents conditions under low farm prices or depression. The demand curve VMP' is drawn under conditions of higher farm prices or prosperity. The supply curve of the factor AFC' shows zero elasticity below point R but is relatively elastic above this point. Farmers would expand production when farm prices rise if the supply of variable factors is elastic. This indicates the importance of the shape of the VMP curve under different conditions of factor supply.

aggregate agricultural output. In the presence of capital rationing and the close tie between the firm and family in agriculture, variable inputs which are not necessary are likely to be reduced even if their use would be profitable. As the family needs become urgent the use of fertilizers and supplementary livestock feeds in the farming operations will be sacrificed when capital resources of the farm family become restricted.

The shift of the supply schedule of labor and the inelastic supply of capital and equipment below a certain price cannot explain the inelastic

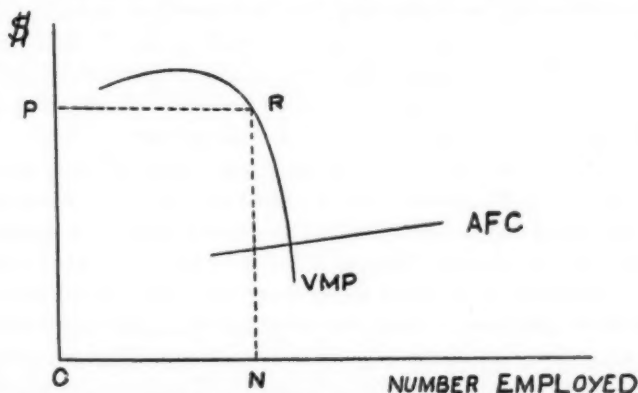


FIG. 4. This indicates the demand for labor by the farmer given the price of the product. R corresponds to the point of optimum production. ON indicates the minimum amount of labor hours the farmer would employ as long as he continues to farm and the price of labor is below OP.

output of agriculture as prices move upward. The same is true of the explanation based on large overhead costs. Heavy overhead costs mean that the adjustment period is lengthened when contraction is necessary. The supply schedules of variable factors are generally elastic when prices move upward. Expansion can readily be accomplished if farmers are in a financial position to bid for the resources.

Let us put these ideas into diagrammatic form. Figure 3 illustrates the idea postulated in large overhead costs and shifting supply schedule. Figure 4 illustrates the demand for the productive factors in which an "optimum point of production" exists. Both diagrams exclude the extensive margin as a consideration. Figure 4 corresponds to Figure 1 directly. The additional quantity produced by increasing by a unit the variable factors employed is multiplied by the price at which the commodity is sold to derive the VMP curves. This represents the value of the additional resources to the farmer and therefore is his demand curve for productive factors. The average factor cost, the AFC curves, are the supply curves of the variable factors. The nature of this curve is not the crucial factor in Figure 4 where the "optimum point of production" occurs. In Figure 3 the shape of the AFC curve must explain the inelastic output.

So far this problem has been approached in terms of micro-economic theory. Figures 1, 3 and 4 may be aggregated to derive corresponding figures for the whole economy. Figure 2 can not be aggregated. Although land is a variable to the farmer, it is not to society as a whole. The VMP curves in Figures 3 and 4 would be slightly more inelastic since price would decrease from point to point as the whole agricultural sector expanded and employed additional factors.

The two divergent explanations shown in Figures 3 and 4 may take different approaches in explaining the increased demand for capital inputs and the increased output that occurred in the United States from 1940 to 1948. The explanation depicted in Figure 3 would emphasize the extension of the intensive margin. The hypothesis advanced in this paper would emphasize other factors as the more important.

There were various factors involved in the increased demand for capital and equipment by farmers from 1940-1948. The most important was perhaps the lessening of capital rationing along with the greater flow of income to farmers during this period. The great improvement in their position of liquidity permitted farmers to buy new machinery they had been unable to purchase during the depression of the thirties. The great technical change in progress was no less a factor. The conversion from horses to power machinery had started in the thirties but it was the availability of capital in the forties that made it an accomplished fact. The technical change embodied in the machinery itself made many machines obsolete. This also increased the over-all demand for machines. It thus

appears doubtful that the intensification of the individual tasks and the expansion of the intensive margin was an important factor in the increased demand for machinery. If it was a factor, it played a minor role.

If we maintain that the increase in farm prices did not expand greatly the intensive margin in agriculture, then we must account for the increased output of agriculture on other ground. The expansion of the extensive margin would account for a part of this increase. Improved technology and the change-over from horses to power would also explain another portion of the increase. Whether they involved a new technique or not, the new machines would be more efficient. The steady secular growth in agricultural output, which disproved Ricardo's dark forebodings, were accelerated in this period. Techniques or technology are embodied not only in machinery but in cultural practices, better grain and animals raised by the farmer, as well as improved feeds and fertilizers. These were at hand in every phase of agriculture in every region of the nation. Even the weatherman may claim some of the credit for increased output. This is especially true of the Great Plains region.

The Production Function Contrasted with Industry

Is this type of cost curve peculiar to agriculture alone? It need not be. There is a shift of emphasis, however, as we change from agricultural to industrial production. So far, land has been considered the relevant fixed factor since it sets the limit. In industry, the entrepreneur becomes the fixed resource whose returns must be maximized. If land, labor, and capital are added to the fixed entrepreneurship of the farmer in the combination of the "point of optimum production," the marginal cost curve assumes a very flat position. The marginal cost may decline at first as the entrepreneur is able to economize on equipment and labor with additional units of land. This results from his ability to increase the size of his equipment at less than proportional cost, and because labor can operate large tractors as effectively as small ones. Eventually, however, the marginal costs will increase as the supervisory tasks increase and the farmer's ability and capacity become taxed. In industry, capital and labor, as well as land, can be added in the ratio of most effective production until the work of supervision also reaches its limit of effectiveness and begins to decline. Investigations of marginal costs in industries in the thirties showed the cost curve to be surprisingly flat. Figure 2, not Figure 1, appeared to be the relevant explanation of the cost curves as they exist in industry. This can in part be accounted for on the basis that since labor or capital can be added, they would be increased in their most effective ratio. Since land is relatively unimportant in industry for finding the marginal returns while holding some factor other than entrepreneurship constant, labor or equipment must be considered the fixed factor. If the analysis

of necessary tasks is applied, it would be surprising if an "optimum productive point" did not show up and if, for instance, techniques were held constant and the machinery used was not changed. This would be analogous to the situation in agriculture since land through the centuries has changed little in form.

In the short run the elasticity of substitution between labor and capital has been relatively low. In the long run the elasticity of substitution has depended on technological innovations and this long-run elasticity has been relatively high. The substitution that has occurred has been a one-way proposition. Machinery and capital have been continually displacing labor in agriculture. From the days of the cradle and scythe until the era of the self-propelled combine, the process has continued and still goes on. This has been the story for the rest of the economy also.

Our analysis would argue that the elasticity of substitution between land on the one hand and the variable factors, labor and capital on the other, is very low. They have remained relatively fixed if we weight capital and labor in terms of the tasks they must perform to bring forth the produce from the earth. Technology has transformed the functions and the work of the farmer in many cases but the necessary tasks have remained the same. However, there is one sense in which land and capital have been highly substitutable. If techniques and improved methods of production are conceived in terms of the capital invested to produce them, then capital has been substituted for land in a very productive manner. The substitution between capital and land in this sense and the substitution between capital and labor have both progressed in one direction. Thus much investment has been land-saving as well as labor-saving. Both these investments have been irreversible in the sense that techniques once learned are never totally forgotten, but are the basis for further technological improvements and increased output.

Conclusion

Inelastic supplies of the labor and capital have previously been stressed in analyses of agricultural output. These discussions have ignored completely the nature of the demand for these factors by the farm sector. It is doubtful that an adequate explanation can be advanced which considers only the supply conditions. It is also questionable that the supplies of the variable factors are sufficiently inelastic to account for the nature of agricultural output under all conceivable conditions of demand for the factors. Inelastic supplies will increase the steepness with which the cost curves rise. This analysis takes the view that in the application of additional variable factors to land, returns diminish very rapidly after a certain point. This fact, reflected in the demand for the factors of production, results in a very inelastic demand schedule. This, in a sense, completes

the other half of the picture and gives a more adequate explanation of the nature of agricultural output in periods when the prices of farm products are high, since the elasticity of the supply of the factors increases as prices rise and prosperity prevails.

Increased agricultural production has been associated with advancing technology and capital rationing facing the farmer. Capital rationing has influenced the rate at which new techniques have been adopted. In times of prosperity, capital rationing has had a smaller effect and the farmers' demand for factors has been increased.

Setting aside the question of capital rationing, the absolute level of agricultural prices has small effect on resource allocation in wide areas of agricultural production. Relative prices of farm products are important. They affect the areas devoted to any specific crop, especially in those areas in which it is possible to shift quickly and easily from one crop to another. Some areas are highly sensitive to the relative prices of different crops.

The absolute level of agricultural prices can only be set aside in a relatively short-run context. The welfare of agriculture depends on a relatively stable and a moderately high level of farm prices. This factor will profoundly affect resource use and development in the commercial sector of agriculture. Depressions in this context are tremendously costly. It is important for farmers and farm policy makers to understand the nature of price reaction in agriculture. Perhaps the experience of the thirties has contributed something of value in this regard.

NOTES

CONFLICTS BETWEEN SOME ASSUMPTIONS UNDERLYING PRODUCTION AND WELFARE ECONOMICS

MANY theorists in welfare economics have for some time accepted the candid and realistic position that precise interpersonal utility comparisons cannot as yet be made; and that very little, therefore, could be "scientifically" said concerning measures purposing to reshuffle or redistribute the income of a society (from whence its "utilities" are experienced). On the other hand, production economics, a sister branch of theory, has maintained the schizoid position that interpersonal productivity comparisons can be made; and, hence, many economists have struck out "boldly" (on what they apparently surmise to be a solid bridge of commensurability) with policy recommendations concerning the re-allocation of labor and entrepreneurship (and other factors also administered by people) from which the productivity of society is generated.

A conflict and an inconsistency exist between the "assumptions" underlying the respective positions that, on the one hand, interpersonal utility comparisons are inadmissible, while, on the other, interpersonal productivity comparisons can be made. This note will call attention to the situation that "the emperor has no clothes"; that production economics is treading in mid-air on a bridge of commensurability which in reality does not exist—any more than does the bridge of commensurability among utilities, and for essentially the same reasons.

It is well known that most economists who have written on the subject believe, and hence assume, it is impossible to make interpersonal utility comparisons, i.e., utilities are incommensurable among people. "The ordinal nature of utility and the impossibility of interpersonal utility comparisons soon became axioms generally accepted by most people who were concerned with such matters."² Bergson "... follows Pareto in thinking that utilities are incommensurable, and agrees with Robbins that because of this, principles of income distribution cannot be deduced from the utility calculus either by the rules of logic or by empirical demonstration."³

¹ The terms utility and disutility refer to compound flows of experience people intercept and/or generate through clock time and are not restricted to any naive pleasure—pain dichotomization of human reactions.

² Tibor Scitovsky, "The State of Welfare Economics," *American Economic Review*, June, 1951, Vol. XLI, No. 3, p. 303.

³ Abram Bergson, *A Survey of Contemporary Economics*, The Blakiston Co., New York, 1948, p. 418. The reference to Robbins is taken from L. H. Robbins, *Nature and Significance of Economic Science*, 2nd Edition, London, 1935, Chapter VI; *idem*, "Interpersonal Comparison of Utility," *Economic Journal*, December, 1938, XLVIII, pp. 635-641.

But, precisely, why have economists been forced to admit the impossibility of interpersonal utility comparisons? What conditions exist in reality and in the current state of knowledge which make this comparison inadmissible? It would be generally agreed that individual A, eating a pint of ice cream, experiences utility. Or, individual A, in a national forest, may stand on a lonely crest and experience utility. In economics, utility can be viewed as the flow of experience (sensory, emotional, intellectual) with respect to an individual that is the concomitant of the process of a part of the environment (ice cream, national forests, etc., as we define or delineate it), impinging upon and interacting with the individual. The utility flows experienced by different individuals cannot be quantitatively compared, i.e., are not commensurable, because *inter alia* we have not yet been able to make objective the utility experience. To say that utility experiences are subjective and ordinal and, therefore, not quantitatively comparable is not a sufficient explanation. To employ an imperfect analogy, many "experience flows," e.g., temperature, are subjective and ordinal, but the temperature of different objects is commensurable because it has been possible to objectivize it. Before objectivization it might have been thought impossible to compare the relative temperatures of different objects. Fundamentally, then, utility experiences of different people are not commensurable, because, in light of the complexity of the experience, we have as yet neither an objective value nor a measuring rod for utility.⁴

Another, more transparent, factor complicates the problem of interpersonal utility comparisons: people are unique in their abilities to experience utility. Therefore, an assumption of equivalence in this capacity is not accurate. This is nothing more than admitting the "natural" variation in organisms; that individuals follow some kind of distribution with respect to their abilities to experience utility.⁵

The Cambridge economists attempted to circumvent the problem of nonmeasurable utilities by assuming that people were not unique; that different people have the same ability or capacity to experience utilities. As Scitovsky put it: "in the words of Alfred Marshall, 'it would naturally be assumed that a shilling's worth of gratification to one Englishman might be taken as equivalent with a shilling's worth to another . . . until cause to the contrary were shown'. . . . Until about ten years ago most of the important publications on welfare economics . . . continued to come from Cambridge, all based on the postulate of equality; that is, of the equal

⁴We are making the beginnings of progress as in various sciences there is incipient construction of the holistic notion of an optimally functioning human organism.

⁵This implies a rectangular distribution with a class frequency of one and the number of classes equal to the total relevant human population.

ability of different people to enjoy themselves.”⁶ But, the Cambridge school notwithstanding, most economists concerned have felt that the problem of interpersonal utility comparisons could not thus be circumvented; that we can as yet neither objectivize utilities nor can we validly assume people to be similar in their capacities to experience utilities.

Some implications, as Bergson pointed out above, are clear. Let us introduce the term “consumptivity,” meaning a person’s capacity to experience utilities. Let us suppose a world of only two individuals, with all income (and product) in the form of, e.g., lettuce. If individuals A and B each consumes a head of lettuce, it is not possible to determine whether A or B has experienced greater utility, because their consumptivities are different—and non-measurable. Even in a simple “lettuce” world (assuming lettuce to be “scarce”), then, the implication is that it is impossible (except by chance), to allocate a given amount of lettuce among A and B so as to maximize total experienced utility—or to redistribute that commodity and demonstrate that total experienced utility has been increased. These difficulties are, of course, compounded in the more complex world, where abilities to experience utility vary not only among individuals—but vary differently with respect to different kinds of consumption.

Although it is widely accepted that it is possible to make interpersonal productivity comparisons, realistic examination will demonstrate that productivity and consumptivity both similarly exist as subjective ordinal capacities or abilities. The same conditions underlying interpersonal utility comparisons also underlie interpersonal productivity comparisons—and interpersonal productivity comparisons, for the same reasons, cannot be made.⁷ The issue, of course, largely turns upon whether physical product produced, or value of product produced, validly can be used as the basis for interpersonal productivity comparisons. In welfare economics, it is admitted that product consumed or value of product consumed gives no precise basis for comparing utilities experienced—or abilities to experience utility. If two individuals each consume, say, \$3,000 worth of goods in a year, we do not conclude from this that their economic welfare or total utility flows are identical even if the same structure of consumption goods is involved. We contend that similarly, if two people each “produces” \$100 worth of goods per week, we cannot therefrom conclude that their productivities are equal or that they are optimally allocated resources.

The first condition, that of the uniqueness of individuals, holds true in production activities as well as in consumption—since we are treating with

⁶ Tibor Scitovsky, *op. cit.*, p. 304.

⁷ This argument holds in some sense for all factors of production even though this discussion is formulated in terms of labor and entrepreneurship. This is true because all factors of production have owners who spend some energy in their administration.

merely another "phase" of each individual's operations. To develop the rather complete similarity of the conditions surrounding productivity, let us employ a concrete example. Again assuming a simple lettuce world, where (apart from labor, entrepreneurship, and factor administration) "identical" production functions exist, individuals A and B work in separate but "identical" plants, in identical jobs, with apparently identical conditions of production. Unsurprisingly enough, each "produces" 100 bushels of lettuce per season—valued at \$1.00 per bushel. That is, we assume it is possible to determine that \$100 of value product is attributable to the efforts of both A and B.⁸ Production theory, assuming the comparability of interpersonal productivities, would conclude on the basis of identical value products that the "productivities" of A and B were the same. But, in fact, the only thing that is equal or comparable is value product generated.

Adopting the traditional dichotomization of production as experience involving "disutility," we have in the production process A and B interacting with a portion of their economic environment (as delineated by theory). This experience on the part of A and B is a compound, sensory, emotional, intellectual (sensate) experience: on generating the lettuce in question both A and B underwent subjectively a sensory, emotional, and intellectual structure of experiences which in each case, in the subjective experience of A and B, was the "real" "cost" counterpart of the lettuce each produced. It is clear that this sensate "drain" on the personalities involved in the production process is subjective and ordinal—it cannot yet be "objectivized" and measured. Which is to say we have no way to measure, or even define precisely, cost. Thus, in no rigorous sense can we make interpersonal productivity comparisons because the essence of productivity—the subjective structure of experiences of different people is non-measurable, ordinal, and thus incommensurable interpersonally; and we cannot validly circumvent the incommensurability by assuming people have equal capacities to experience productive drains—because we believe that all people are also unique in this capacity. To put the matter another way: In the following representation as production theory argues, if,

Labor input	A →	\$100 lettuce
	<u>Plant 1</u>	

and similarly

Labor input	B →	\$100 lettuce
	<u>Plant 2</u>	

the value products are the same, then productivity of A and B is the same. This must imply that the inputs of A and B are the same. But we have

⁸ For the unrealism of this assumption see forthcoming paper by the same authors.

demonstrated that the inputs of A and B are subjective "drains" on their personalities analogous to utility flows—and that, if individuals are unique, the drains are different, subjective, and therefore incommensurable. Then, on the basis of the reality of uniqueness of individuals, the argument of theory is not logical. Logic would have us say the value produced in each case is the same \$100, but the inputs are different and productivities are different and incommensurable.

If, as may be argued: "but we define productivity as \$100"—then logic seems to be out the window. To wit: why are the value products equal? Because the "productivities" are equal. Why are the productivities equal? Because the value products are equal (so far, only a tautology). But fundamentally why are the productivities equal? Basically the answer boils down to: because the inputs of A and B are equal. But this is not valid if we believe that people are unique as appears realistic. Not only are the inputs unequal, they are subjectively and unmeasurably unequal. If we assume \$100 value product measures productivity, we assume equality and commensurability of drains and this is not so. If we are not concerned with this matter, i.e., if we are willing to overlook this, then we must admit the conflict with welfare economics, where realism in this matter does prevail—where consumption of equal amounts of goods by individuals does not have the same implication for the experience of the flow of utilities—as does the production of goods for the flow of events experienced in productive activity.

Now, let us remove the veil of artificiality in the form of "partial" type analysis and the dichotomization of production and consumption reflected in production economics and welfare economics, and develop some further implications for interpersonal productivity comparisons and the specious objectivity connoted by value product comparisons.

In the first place, as an empirical datum recognized by Marshall,⁹ e.g., production is creation of utilities and some of these exist in the "satisfactions" experienced while engaging in work. That is, production as an experience involving only real cost, or real sensate drains on the personality, is a naïve and incorrectly abstracted notion. Actually, "production" of "value" product involves a utility experience compounded with a real cost sensate drain kind of experience and the constituents of this composite structure cannot be separated into two single-valued heaps. Since some of the productivity is in the form of utilities immediately experienced or consumed by the worker, and since we assume that utilities are incommensurable, then it again follows that productivity must be incommensurable, and interpersonal productivity comparisons cannot validly be made.

Another aspect—introduced by elimination of the dichotomization—

⁹ Alfred Marshall, *Principles of Economics*, 8th edition, Macmillan, pp. 140-141.

involves consideration of the fact that comparability and commensurability of productivity, as currently viewed, is based on relative value products. Commensurability among value products is itself established by a money price as a "bridge." Market prices, as established, are based in part on different expected and incommensurable utilities of relevant consumers, and in part on the supply functions reflecting incommensurable utility of leisure sacrificed. Incommensurable "utilities experienced" do form the basis for price and relative value products—but in fact we are employing incommensurable utilities thus to introduce commensurability in productivity. This is patently illogical.

Let us consider one more aspect of the interdependence of consumption and production. Consumptivity or the ability to experience utility (as abstractly delineated) influences and is intersuffused with production—the process of sensate drain in which utilities are produced, and conversely. That is, productivity, e.g., producing ice cream, or lectures, etc., depends on and is psychologically and sociologically inseparably interwoven with consumption. The dependence of consumption on production is obvious. Therefore, it is not possible to make commensurable interpersonal productivity if it is not possible to make commensurable the interpersonal utility experienced with which the productivities are associated.

Let us now introduce dynamics into the problems of interpersonal productivity comparisons. Indeed, it is strange that in a total operating culture, an essence of which is dynamics and growth, interpersonal utility and productivity comparisons and theory should have been in attribute chiefly static. In a dynamic situation we are concerned not only with individuals' actual existing ability to experience utility or produce utility—but with individuals' potential abilities. This is quite another matter. For even if we could make these static abilities commensurable, we still could not allocate income or services to maximize utilities consumed and produced—because static existing abilities of people to consume or produce is in no uniform currently determinable way related to their potential abilities. Given two laborers, one of whom is a potential Einstein, there is no way of knowing this from their existing productivity or consumptivity. Thus, the dynamic problem focuses on not merely the inability to make interpersonal comparisons of existing productivities, but on the inability to make interpersonal comparisons of potential as opposed to existing productivities.

Since this discussion has very limited objectives, no comprehensive attempt will be made to follow through its implications *vis a vis* problems in research, analysis, policy, and the formulation of theory. These implications are numerous and many, of course, are obvious. It emphasizes an important facet of the inexorable involvement in welfare problems of resource allocation economics. It suggests the desirability of over-all

generalistic scrutiny of the specialistic components which constitute the field of economics for internal, as well as external, consistency and for valid as well as for appropriate realism. We need to concurrently re-evaluate the bases for quantification in economic research as insights into socio-cultural processes cumulate and improve.

In conclusion, the authors submit that the theoretical foundations for the productivity and efficiency comparisons which comprise a significant proportion of agricultural policy recommendations are tremulous indeed. On the one hand, the nonpecuniary concomitants of occupational alternatives are probably more important than is generally recognized.¹⁰ And on the other, equality and/or comparability of marginal value products cannot serve as a rigorous criterion of resource allocation efficacy since inputs are unique and currently incommensurable.

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A FURTHER NOTE ON LAND ECONOMICS

PROFESSOR SCHULTZ has a way of stimulating thought and controversy in his writing, as in his teaching. His recent article¹ is a case in point—*vide* the quick response from Dr. Loomer of the land-economics group at the University of Wisconsin.² This note is intended to call attention to aspects of Dr. Schultz's presentation which are amenable to further exploration.

Professor Schultz mentions the important role granted land by the earlier writers—some seeing it as bountiful, some as niggardly. The important fact is that land never plays a neutral role. (To preserve Dr. Schultz's theatrical analogy, one might say that land has been a constant sort of thunder in the wings.) Professor Schultz does not emphasize the very important point in which he agrees with Professor Knight—that land is, *ipso facto*, indistinguishable from any other productive element; in effect, it is merely part of the general complex Professor Knight has catalogued as capital. As such, land in the economy should behave just as any other productive factor, and following Professor Friedman's contention, there should be no need for a "land economics"—one economics should do for all analyses. Then, Professor Schultz reverses his field and looks for a special role for land. He presents the very help-

¹⁰ Cf. Arnold Brekke, *Development of Agricultural Policy*, *This Journal*, November, 1950.

¹ Theodore W. Schultz, "A Framework for Land Economics—the Long View," *This Journal*, Vol. XXXIII, May, 1951, pp. 204-215.

² C. W. Loomer, "A Comment on Professor Schultz' 'Framework for Land Economics,'" *This Journal*, August, 1951, pp. 389-396.

ful retardation hypothesis. The remainder of his article is a discussion of contemporary ideas in land economics as they have been presented—from the earlier assumption that land, really, cannot be considered inherently different from any other productive factor.

Dr. Schultz admits that there must be something special to this land business. Dr. Loomer's energetic defense of land economists from what he takes to be criticism of their work implies that many other people are convinced that there is something special about land. We have the evidence of the persistent appearance of land as a preoccupation among the older writers. Yet Professor Knight's position would seem to be unassailable. Let us pause for a methodological reflection.

Dr. Schultz tackles any problem in macroscopic terms; he seeks general conclusions based upon his estimate of the larger economic truths of the situation. He deals with the national scene as a whole. This is true of his discussion of agricultural land in the national economy. He is seeking significant generalizations about agricultural land which are of the same level of abstraction as the economic variables with which he deals. His use of special cases as illustrations of larger ideas do not render these cases open for criticism on their merits—that would be another subject. (The writer, for instance, takes issue with Dr. Schultz on the homogeneity of prosperity in dairy areas near cities, but this is a digression in which he will not indulge further.)

An important principle underlies Dr. Schultz's approach to land economics. It is that any regularity in a social institution (the meaning of land to people is in every way a social institution), found by any discipline, can be used as a significant unit in economic analysis. If there is to be a "land economics," economists must be able to work with the economically significant characteristics of any reaction between people and land, found by any scholar—soil scientist, sociologist, historian, or psychologist. Further, the economist must fold these significant regularities into his analysis at a consistent level of abstraction. This, it is submitted, Dr. Schultz has done. But let us generalize this point further.

A group found to exist by a sociologist offers a ready-made economic unit for the economist; within the group, certain special trade relations can be expected to exist. The existence of the group may explain an irrationality, or an imperfection, in a larger allocation of income or resources. For example, the Old Order Amish in Lancaster County, Pa., have achieved a level of investment in their soil which is quite out of line with returns available to these farmers in other areas of investment. In this case, as in so many others, the imperfection has a dynamic quality of its own; the dynamics of the imperfection have economic consequences which, when the regularities are made clear to economists by others, are meat for inclusion in economic analysis. In the case of the

Amish, the strong group feeling holds a large population in a small area, and the land has been built up as the only permissible outlet for investment.

Returning to a consideration of "land" in general, we see how not even Professor Knight can expunge the idea that there is a dynamic force in the relation between people and land; something not yet explained, that has a continuing economic significance which will not "wash out in the long run." Professor Schultz's retardation hypothesis looks like a long step toward illuminating the dimensions of this dynamic, and suggesting where the devil should be looked for. What else can we do?

We must look for help from other disciplines. But such has been the dominant role of economics in social sciences that so far, nothing very helpful has come from the anthropologists, historians, psychologists, and sociologists. Perhaps economists can suggest new regularities for which these other people should look. One thinks at once of the role of land, and more particularly of cattle, among many primitive peoples—among the Bantu and Navaho. One reflects that inability to coerce peasants has been a persistent stumbling-block of all recent totalitarian regimes.

It is fitting that we take a new look at the relations of people and land—at the meaning of land to people, in the emotional as well as the economic sense. Has "land" had a particular meaning to people over a period of time? The writer would say that it certainly has. Has this meaning been consistent in its manifestation? Probably not. So what? Just this—if land has had a discoverable secular social role other than as a form of capital, economists should be told of the nature of this role, that they may determine its economic consequences, and include it in their analyses.

Who is to do this service for economists? Historians could help more than they have. Anthropologists would appear to be promising aides. There seems to be more than a dash of psychological overtones, approachable perhaps through careful study of folklore. From the writer's viewpoint as a city-bred observer of rural affairs, three evidences of an undefined social role of land come to mind:

First, the persistent preoccupation with land by economists down through the ages. It just can't seem to be exorcised.

Second, the phenomenon of rural life with its special characteristics which cannot, it seems to the writer, be explained only in terms of living away from one's neighbor and so forth. Land seems to enter "the rural way of life" in a consistent manner the world over.

Third, the fact that even non-rural people are interested in land. The great evidences of this are the recreational roles of land, and that unexplained phenomenon of our society—which must exist in other societies too—the conservation movement. Leaders of the conservation movement

have seldom been persons whose interest in land is related to its role as capital. Rather they have been persons with that freedom from worries which permits them to give vent to their personal feelings. It may be that their apparent transferred emotional dependence upon land will give a psychologist a hint as to where to begin a study of land in our society.

In summary, Dr. Schultz has blazed a pathway in land economics. He has made a break-through into the problem of relating a major institution to economic analysis on an abstract level. To exploit the advantage, we need new tools. We need a new appreciation of this thing called land; a new appreciation of what it means to people, and what is the economic significance of this meaning. Perhaps then we will begin to see why some people prefer to stay down on the farm even "after they have seen Paree."

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ANOTHER VIEW ON THE PLANNING OF AGRICULTURAL POLICY

IN A recent issue of *This Journal*, Dr. W. Robert Parks of Iowa State College presented an excellent discussion of the problem of developing public agricultural policies.¹ His analysis of the problem was penetrating, his solution infallible, and the mechanism he suggests to achieve the solution probably both unworkable and undesirable to the nation as a whole.

Professor Parks shows the dichotomy that faces the development of a public agricultural policy. The policy must in some fashion be economically sound, administratively feasible, politically possible, and in some manner represent the broader interest of the public as a whole. It is pointed out that these considerations quite often are incompatible and the resulting programs fall short in measurement against one or more of these points. The reasons given are many: Our system of congressional committees; lack of programmatic political parties; strong agricultural pressure groups who, of necessity, must forward short-run gains for agriculture over the long-time interests to maintain memberships; and the lack of political strength of low-income farmers outside these pressure groups, especially in the single party system of the South.

Needed to cure these problems, as Professor Parks sees them, is more and better planning for agriculture. He proposes the establishment of a

¹ W. Robert Parks, "Political and Administrative Guidelines in Developing Agricultural Policies," *This Journal*, May, 1951.

planning agency within the Secretary of Agriculture's Office that is to be composed of representatives of farm organizations, key members of congressional committees dealing with agriculture, and a few outstanding academicians—the latter presumably to put the economics into agricultural policy since he admits they would be short on political sensitivity. The writer agrees wholeheartedly with the idea that improvement in public agricultural policies will come through better planning, but dissents strongly against the planning agency as Professor Parks suggested it.

What Is Agricultural Planning?

In this case, as in most other differences of opinion regarding the desirability of various planning agencies, the major differences probably hinge on a definition of government planning.

Planning is undoubtedly one of the most mistreated words in the language now because it has become associated with ideologies opposed to democratic government and to "free enterprise." Nothing could be more ridiculous. As long as men have minds they will plan for the future, whether they be farmers or government officials or businessmen. Of course, the real issue at point in the general attack on "planning" is whether we shall have centralized planning of individual enterprises or individual planning of individual enterprises. This issue is not pertinent to the present discussion.

If we lay aside the issue of centralized versus individual planning, there still remains the issue regarding the improvement of national agricultural policy. This involves planning in two branches of government, the executive and legislative. Nearly everyone will agree that our agricultural policies can be improved. How then, and by what agency or agencies, should this government planning be improved and carried out?

Even worse than the general attack on "planning" as an idea is the fact that sophisticated political scientists, who are far above worrying about such connotations, cannot really agree as to what government planning means. While there may be as many definitions as political scientists, they may be divided into three general classes for the purposes of our discussion. These are: 1) Planning is merely a process inherent in the operation of good government; 2) Planning is something of an educational process, in which ideas of various experts are made available to the executive, legislature, and to the people; 3) Planning is something of a fourth branch of government, which should guide (or direct) the other branches so they will stop making such a mess of things.

The first definition can be more fully stated by saying, "Planning is not, as I am using the term, a general political theory, or a doctrine of public functions and powers, but a process, I repeat, of facilitating better decision making. It is not in itself an assurance of good or bad policies and

programs or operating; it may be well done or badly done; it seems to me inherent in the larger process of government."² Thus, planning is viewed as a normal staff function which facilitates the flow of relevant data to the strategic points of decision making, i.e., the legislators, chief executives, bureau chiefs, etc.

The second view of planning has been expressed by Charles E. Merriam in an article explaining the functions of the National Resources Planning Board.³ He suggested a board of 30 members who serve on a part-time basis at the pleasure of the President. They would plan and issue reports to the President, transmit them to Congress, and report to the public. Presumably, these reports would enlighten the public and the branches of government so that more rational action would follow. While it was not suggested, the writer suspects that such an agency also could be created for departments with planning difficulties.

R. G. Tugwell states the third view in these words: "The British have fallen naturally into a merger of mind and over-all executive controls; and they will doubtless go on developing that way. We would find another way more appropriate, perhaps necessary. NRA had some characteristics the British would understand; it was rejected here because it did blur the separation of powers; it was 'delegation run riot.' Unless executive and legislature in our system develop a wholly new entente, planning cannot develop as central planning except as another independent agency."⁴

Now the question comes back as to which of these views of planning is a useful and pertinent concept in regard to agricultural policy. It would seem that the third concept can be eliminated, at least in our present state of political thought. It is doubtful if we are ready for that much planning in agriculture. Even if we were, the usefulness of such an agency is questionable. How do they enter the political process? Are they elected; if so, how do they coordinate with the elected legislators? If they are appointed, how do they differ from a normal staff agency?

To move on to the second view. Experience shows that the Congress did not take at all kindly to the National Resources Planning Board. In fact, they were quite brutal in its abolishment. There is no doubt that its reports were fine and some of the suggestions were adopted. But it would seem that such a function can best be performed by non-governmental organizations who operate outside the political processes

² J. M. Gaus, "Education for Regional Planning and Development," *Social Forces*, Vol. 29, No. 3, March, 1951, p. 230.

³ Charles E. Merriam, "The National Resources Planning Board: A Chapter In American Planning Experience," *The American Political Science Review*, Vol. 28, December, 1944, p. 1,075.

⁴ R. G. Tugwell, "The Utility of the Future in the Present," *Public Administration Review*, Vol. 8, Winter, 1948, p. 54.

and do not have to depend upon congressional appropriations. They have the experts and can issue excellent reports for the edification of government officials and public discussion. No group of part-time persons will ever accept the political responsibilities necessary to make such an organization a valuable asset to our political process. In fact, witness the present uncertain status of the Council of Economic Advisors and their reports, even though they are attached to the office of the President.

Now, back to the first view of planning. To many of the more avid advocates of planning, this is no planning at all.⁵ It merely becomes a part of the normal process of staff work in an executive agency. The critical question is whether this, if done well, would be useful and improve agricultural policy. The author believes that it will, and that this type of planning can be improved within our present governmental organization. This type of planning essentially calls for better staff agencies to help facilitate better decision at the crucial points—the Secretary's office when he formulates proposals for the Chief Executive and/or legislative consideration, and in the legislature. This planning function can be useful only when the administrative channels from the field offices and land-grant colleges effectively pass research and administrative experience to these points of decision making, and when there is a staff agency at the decision point capable of analyzing and evaluating it in light of the policy decision in question. It is doubtful if it would be desirable to call the staff of the Secretary's office that evaluates and analyzes this material a planning agency under any conditions. Witness the sad fate of the Bureau of Agricultural Economics as a planning agency. However, regardless of what it is called, the planning function chosen here can and must be carried out as a normal phase of public administration. Let us examine the effects Mr. Parks' proposed planning group would have if they were inserted into this position and given this function.

The USDA's Place in the Government Planning Function

The USDA has been accused of being the farmers' department, and it has been stated by congressmen that if it is not thinking of the farmers' interest, it should. Yet, the fact remains that the Department, because of our strange political party system and the congressional committee system, bears the burden of representing the broader view on agricultural policy to the major points of decision making. This is inevitable as long as the Department is responsible to a Chief Executive elected by votes of the public. At the same time, it also must be the Department, or some of its agencies, which brings the problems of the low-income farmer to

⁵ See Mr. Tugwell's comments on such views and people who espouse them in the book review cited.

these same points of decision making, both because of their political ineffectiveness and the fact that they are not represented by farm organizations. And the Department probably is also in the best position to bring the results of research by the land-grant colleges to those same points of decision making.

Admittedly, this process is imperfect and has not resulted in agricultural policies which fit Mr. Parks' guidelines. But the writer wonders if the planning agency he suggests would be more effective? It is doubtful. In fact, it might destroy the effectiveness of these channels entirely. The planning process must be a part of the political process. Unless this is so, the plans will either stand no chance of adoption or prevent accountability of the planners to the public. The proposed agency would not be politically responsible and probably would do damage on both counts.

Farm organizations are organized to represent farmers, or at least certain groups of farmers. They usually have resisted attempts to bring agricultural policy into party politics.⁶ To move them into a strategic planning agency in the Secretary's office would not change their attitudes. Its major result undoubtedly would be to put them into a strategic position to block the broader interest considerations before they reached the legislators or perhaps even the Chief Executive, and to effectively block any agency programs which did not coincide with theirs. Putting representatives of strong farm organizations into a planning agency will merely improve their strategic power, not their public political responsibility, as they still will have the same membership to please.

The same is true of college professors. It is possible that they might learn more about political feasibility and agricultural policy, but since they will not depend on politics for their jobs they would also continue largely to ignore them as they have in the past.

As for Congress—there is indeed an interesting thought. Of course, it is unlikely a planning agency would be allowed to exist at all. Few, if any, have survived their scrutiny in the past. Even if they did, and they had congressional representatives as members, why would the congressmen change their attitudes about the Department's function as the farmers' representative? They probably wouldn't and another effective block would be established to retard the movement of information to the points of decision making. Of course, they would have a political sensitivity, largely to rural areas and commercial agricultural interests.

The most important effects would be upon the agencies within the Department and their functions in the planning process.

One of the major factors leading to the demise of the BAE as a planning agency was the feeling of other agency administrators that their

⁶ See Charles Hardin's article on this matter in the November, 1950, issue of *This Journal*.

administrative experience would be blocked from the Secretary's office and be largely ignored. If these agencies were forced to submit this experience to the suggested heterogeneous planning agency, the block would be complete. If rival legislators followed their usual actions, all the research and administrative experience involving low income farmers, consumer interests, and Negroes would be effectively withheld from the points of decision making. Farm organization representatives would naturally and understandably try to prevent any part of the planning from containing ideas to which they had previously registered opposition.⁷ Thus, the administrative and research experience needed to develop sound programs would be blocked off from the point where it could be used. In its place would be substituted a group with widely differing basic values who are supposed to effect a compromise that can be presented to the legislative point of decision making. Even if the report of the planning agency was submitted by the Secretary for consideration it surely would not be politically feasible. If he refused to submit it or altered it, there would be loud cries of "politics" and unpleasant minority reports would be issued in a deadly hail.

Of course, all of these groups must compromise if any policy is to emerge, but the place for this compromise is in Congress. The Department of Agriculture and the Secretary's office are not the place for such battles. They have other equally important functions to serve.

There should be little question that the Department is a major policy making force, and rightfully so. A large portion of our agricultural policy is determined by the administrative discretion within the broad acts authorized by Congress. A major portion of the responsibility for agricultural policy must rest with the operating chief as he administers within the framework of law and yields to the various pressures and interests as they arise. Planning and policy cannot be separated; the responsibility must rest on the same persons, and to some extent, they are the parts of the same operation.

As long as we recognize that the Department of Agriculture is an important policy making agency, we must recognize concurrently that its administrative channels must be kept open to facilitate the planning it must do.

There still remains the major unsolved problem of improving the planning function at that all-important point of decision making, the legislature. This is a problem that runs throughout our government and is not exclusively agriculture's. It certainly will not be solved by putting additional blocks between the legislative and administrative agencies, a major source of information to the legislature.

⁷ There is enough difference between the major farm organizations to make some interesting squabbles that would prevent any effective planning.

The Hope Ahead

If an agricultural planning agency in the Secretary's office composed of congressmen, farm organization leaders, and professors will not improve our agricultural policies toward the guidelines, is there no hope?

It would seem that perhaps a ray of hope appeared on the horizon two years ago, but in a form that was overlooked by political scientists and agricultural economists. I refer, of course, to Mr. Brannan's plan which aroused such a storm of controversy throughout the nation. This is no time to debate again the economics of the plan, about which most agricultural economists agreed. Leaving aside the economics of the proposal, it did something few other proposed agricultural policies have been able to achieve. It became not a debated program, but a party program. Members of Congress were obliged to campaign for or against it as a part of the party platform in many states, thus subjecting agricultural policy to broader opinion and vote than is usually the case. That it lost is immaterial, for it may have started a trend which will go far in solving the problem of getting the broader interest into agricultural policies.

In summary, the writer feels that it will probably do little good to strengthen the planning mechanism of the Department of Agriculture under our present party system. The main improvement must come from a more programmatic party system and better work by congressional committees dealing with agricultural policies.⁸ When these have been achieved, the planning functions of the Department may prove to be more effective than they now appear.

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AGRICULTURAL MACHINE STATIONS IN NORWAY*

INDIVIDUALLY and cooperatively owned machine stations provide one important means for dealing with the critical situation in Norwegian agriculture. These strategically located stations, financially aided by the state, own modern farm equipment with which they do custom work for individual operators of small farms who cannot profitably own the necessary machinery. Their development should have a potent effect upon agricultural production and upon the problems caused by (1) the

* There is an interesting trend in the establishment of permanent professional staff agencies for congressional committees. These would fall under the author's definition of planning agencies for this highly important point of decision making. Perhaps here is the place that a planning agency would improve our policies most under present conditions.

* Material for this article was obtained in Norway, while on the Olaf Halvorsen Fellowship of the American-Scandinavian Foundation, 1949-50.

acute shortage of farm laborers, (2) the increase of population and (3) the need to fit agriculture, as a sector of the economy, into the long-term program of the Labor government.

Today, there is an acute shortage of farm labor in Norway because:

(1) Since 1945, between 35,000 and 40,000 farm workers, about nine per cent of the farm labor force in 1945, have gone into industry. The recent flight from agriculture has been about twice as rapid as in previous years.

(2) In 1948, the length of the working day for hired agricultural labor was shortened to eight hours by legislation, although the contract between the Land and Forest Workers' Union and the Agricultural Employers' Association had this provision for some time. This reduction in the work day amounted to an additional loss of labor, for only a portion of the farm laborers were covered by the contract.

(3) The passage of the three-week vacation law in 1947 was particularly harmful to agriculture, not only because of the time lost, but because Norwegians insist on taking their vacations during the summer months.

During this period of significant reduction in agricultural labor supply and a shortening of work time, the population increased by 258,000 or 8.8 per cent above 1938. A factor more important than the absolute increase in population, is that the proportion of the population able to work is increasing at a slower rate. In the 1930's, the age group able to work increased by nearly 30,000 annually. Now the increase is about 4,000 per year, and in the future, it is likely to be less.¹ The necessary future expansion of agricultural production cannot be based on manpower reserves, as there is full employment; nor on new supplies of labor, but rather on a thorough rationalization of the industry.

The Labor government realized the necessity for investment in this sector of the economy to (1) take up the 4.5 per cent loss in real capital in agricultural machinery during World War II,² (2) increase production to keep pace with the growing population, and (3) rationalize the industry so that in the future it would take a smaller percentage of the total labor force while at the same time increasing production.

Table I shows the gross investment program for agricultural machinery and equipment in the national budgets for 1947-49 inclusive.

The estimated average annual gross investment for agriculture as a whole for 1949-1952 is 60 million dollars.³ The gross investment in agricultural machinery and equipment in the next few years probably will be as

¹ *Memorandum on A Norwegian Long Term Program*, Economic Cooperation Administration, pp. 14-15.

² *Ibid.*, p. 10.

³ *European Recovery Program, Norway-Country Study*, Economic Cooperation Administration, February, 1949, Washington, D.C., p. 37.

TABLE I. GROSS INVESTMENT IN AGRICULTURAL MACHINERY AND EQUIPMENT IN 1947-49 INCLUSIVE

Year	Million Kroner	Million Dollars
1947	47	9.46
1948	50	10.06
1949	57	11.67

Source: Norwegian National Budget 1949, p. 51.

(The dollar figure is based on the pre-devaluation rate of 4.97 kroner per dollar because import of machinery and equipment was figured on that basis.)

great as in the post-war years. It may be even greater if the programmed imports of the Norwegian government give an accurate indication of future trends. Imported tractors and agricultural machinery were to be increased in 1949-50 by 20 per cent over 1948-49.

Government Credit Program

The Norwegian government was not without experience in the financial and organizational problems of giving loans and subsidies to farmers to purchase equipment on a collective basis. From 1918 to 1928, the state gave subsidies to farmers who owned the equipment on a cooperative basis, and from 1917 to 1928 the Norwegian government made loans for the purchase of farm machinery. In 1946, the legislature amended the law of 1936, under which the Production Credit Office for Agriculture (Driftskredittkassen for Jordbruket) was operating, to permit this agency to lend directly or indirectly to two types of machine stations and to give subsidies for the purchase of agricultural equipment. As much of the machinery, particularly tractors, had to be imported, and, at the time the program was instituted, the world's supply of machines was limited, it was essential that the machine stations be organized properly so as to use the equipment to the optimum degree. By so doing, the fixed expenses would be less per working hour, and the machines would more likely be handled by skilled workers.

The machine stations may be organized either as (1) cooperative machine purchasing societies, in which the machines are owned jointly by farmer members, or as (2) machine holders, in which the machines are owned by single individuals who contract with a number of farmers to do their work at fixed rates.

The Production Credit Office is now granting loans so that each member of a cooperative purchasing society is granted a loan corresponding to the portion of the purchase expenses assigned to him within the cooperative. The cooperative machine station may borrow up to 70 per cent of the purchase price of the machines and receive a subsidy up to 30 per cent of the purchase price, but not over 2,000 kroner per full dekar

owned by the members. Under certain circumstances, therefore, the cooperative society may obtain 100 per cent of the purchase price, part by loan and part by subsidy.

The stations operate under the technical guidance and supervision of the Production Credit Office. To obtain the 30 per cent subsidy, the area or territory of operation for both the cooperative station and the sole owner type must be approved by the local (county) farmers' council. All the farmers in these areas have the right to become members of the cooperative station or to hire the services of the station if the machinery is owned by a single individual.

An individual wishing to be the sole owner of a station may borrow either from a Cooperative Credit Association or directly from the Production Credit Office. For a loan from a Cooperative Credit Association, approval of both the Association's Board of Directors and the Production Credit Office has to be obtained. For a direct loan from the Production Credit Office, approval of the director as well as the local farmers' council and the Provincial Agricultural Society is needed.

The sole owner of a machine station may borrow up to 10,000 kroner and, with the approval of the State Agricultural Department, may obtain a larger loan. A loan from a Cooperative Credit Association may be up to 75 per cent of the purchase price, but not over 200 kroner per membership share. A loan directly from the Production Credit Office may be up to 70 per cent of the purchase price. When a loan is made directly from the Production Credit Office to the individual, he must contribute at least five per cent of his own capital to the purchase of the machine. In the regulations for loans to machine stations of the sole owner type, the Agricultural Department has stipulated that special note be taken of the individual's personal qualities. He must possess the skill and will to develop his machinery station. He also must have professional education as a farmer and have had some practice as a mechanic. Separate contracts concerning the work are made between the sole owner of the machine and the farmers. For the security of the station and the stability of the arrangement, the farmers who intend to hire the services of the station, shall, as a rule, guarantee at least half of the sole owner's liabilities to the Production Credit Office.

The amount of the subsidy depends upon the area of arable land the station will work. In the case of the subsidy to a cooperative machine station, the cultivatable land of the members of the cooperative is the deciding factor. In the case of the sole owner, either the area of cultivatable land of the farmer who guarantees for, and signs contracts with, the individual owner; or the decision of the farmers' council is used when the individual does not have any guarantors for the loan.

The state subsidy is given to the machine station at the time the

machine is purchased, but the subsidy (and the loan, if any) must be paid back into the Production Credit Office in semi-annual installments within 10 years. After 10 years of operation, the station, with the approval of the Production Credit Office, may use the funds (equal to the amount of the subsidy) for purchase of new equipment or use in some other manner. A machine station that has received a state subsidy may not, in the course of the first 10 years, stop operation nor sell any of the machinery or equipment without the approval of the Production Credit Office. If a station operates contrary to these regulations, the Production Credit Office may refuse to pay back to the station all or a portion of the subsidy funds that the station pays to the Office in semi-annual installments. The same applies if the Production Credit Office finds that the station is not operating according to the agreement which was made to obtain a loan or subsidy.

The requirement that the amount of the subsidy be paid to the Production Credit Office over a 10-year period, even though it is to be returned to the stations at the end of the 10-year period if they are properly operated, is necessary during the life of the machines for purposes of operational control. In the case of stations of the sole owner type, many of the applicants have paid cash for their share of the purchase price and obtained a 30 per cent subsidy. If the Production Credit Office did not have control through the above mentioned device, the sole owner might do as he wished and in effect, immediately secure a machine at a 30 per cent reduction in price.

For the two-year period from July 1, 1946 to July 1, 1948, the Production Credit Office made loans for a total of 2,000,000 kroner (about \$400,000 at the pre-devaluation rate). During the fiscal year 1948-49, loans totaled 4,000,000 kroner (about \$800,000) and subsidies 3,000,000 kroner (about \$600,000).

At pre-devaluation prices, a station needed to invest between 15,000 and 20,000 kroner, depending upon the needs of the locality to obtain the necessary equipment. The amount required at the present rate of exchange is somewhat higher, as 34 per cent of the programmed imports of agricultural machinery is to be from the U.S.

Growth of the Stations

In many districts, fundamental organizational work already has been carried out, the farmers' council having marked off zones of operation for the separate stations. Five of the provinces, in which agriculture is important, have established main central stations for the entire district, at which the more costly machines are kept.

The number of machine stations has grown rapidly since 1946 for a number of reasons: (1) the loan and subsidy program, (2) better financial

position of farmers, and, (3) the loss of hired farm labor to industry. Table II below shows the growth of the two types of machine stations.

TABLE II. GROWTH OF MACHINE STATIONS, 1947-49

Year	Total Number	Annual Increase	Type of Station			
			Cooperative		Sole Owner	
			Number	% of Total	Number	% of Total
July 1947	55	—	—	—	—	—
July 1948	592	537	139	23.6	453	76.4
July 1949	1,208	616	343	28.4	865	71.6

Table II shows the rapid growth starting in the second year and continuing through the third year of the program. The future rate of growth is limited by the position of agriculture in the investment program of the national budget, and by Norway's foreign trade balance. Although it is likely that agriculture's position in the investment budget will not change appreciably until completion of the long-term program in 1952-1953, it seems probable that the rate of growth will not continue at the high level established in the past two years. As of December 15, 1949, there were 1,400 stations. Officials at the Production Credit Office calculate that the total number within the next few years would reach 2,000. They look for an increase in the number in northern Norway and in the west coast area north from Stavanger.

How Successfully Are They Functioning?

How are the machine stations working? Are they accomplishing the goals set up? What unforeseen problems have arisen?

These are difficult questions to answer at present because insufficient time has transpired to note any significant changes in the methods used, and because no systematic wide-scale study has as yet been made of the operation of the stations. However, a study of three selected stations was made in 1949 by a student at the Agricultural College of Norway at Aas.⁴ The number studied is too small to provide a basis for definite conclusions, but the study does indicate how these machine stations are operating. These particular stations have been in operation since the beginning of the program.

The type of machines and equipment included: rubber tire tractors, plows, cultivators, three types of harrows, threshing machines, binders, hay mowers, potato planters and diggers, and cross-cut and timber saws.

⁴ *Tre Maskinstasjoners Arbeidsinsats og Økonomiske Resultat i 1948, Norges Landsbrukskole, Aas.*

Greatest emphasis is placed on those machines needed for spring work. The stations are not used as much for reaping as for threshing grains because the women and children of the family can be used to cut and bind the grain.

In the three stations studied, the machines had the effect of reducing the amount of hired help for 35 per cent of the farmers and 17 per cent were able to do more difficult work. However, the working day was not shortened for any of them. There was no change in the proportions of the various crops nor any change from animal production to plant production. It is likely that insufficient time has elapsed to bring about any shift in the type of farming.

Fifty-six per cent reported favorable experience with the stations, while 35 per cent answered that it was difficult to get the necessary machines when needed. It was profitable to use the station for 65 per cent, while 26 per cent said it was too expensive.

It was found that small farmers with less than 20 dekar (about five acres) of arable land were not particularly interested in using the machine stations. Fifty per cent of the farmers served by the three stations used the machinery 10 hours or less in 1949. The Production Credit Office estimates that each farmer within the respective station areas must use the station between 30 and 40 hours per year if the station is to operate at a profit. Only the larger farms are able to profitably use the station this number of hours.

The average machine station can service 800 to 1,000 dekar (200 to 250 acres) of arable land plus an equal or larger area of forest land upon which some machinery can be used. The important factors are size of the individual farms which make up the total area and shape of the fields. The minimum area of 800 to 1,000 dekar should be composed of not more than 20 to 25 separate farms. Importance of the length of the field is shown in a study by the Production Credit Office, which indicates that the cost of plowing a field 200 meters long is about one-half the cost per dekar as a field 45 meters in length. For plowing and cultivating, the cost declines from 11.70 kroner per dekar for fields 45 meters in length to 6.30 kroner per dekar for fields 200 meters long.⁵

Transportation time for moving machinery from the station to the farm and return, or from farm to farm accounted for 10 per cent of the total effective work and transportation time. The Price Director in each province sets the price for machinery transport to and from the farm on a per kilometer basis with a certain minimum charge. The Price Director also sets the price that the machine station, cooperative or sole owner, may

⁵ "Noen resultater fra tidsobservasjoner for ploying og harving av Oleif Bones," *Norsk Landsbruk*, 1949, number 8, pp. 144-146. See also *Norsk Landbruk*, 1948, number 2, p. 29.

charge for the use of the various kinds of equipment. The charge is based on the cost of the machine and current expenses, including labor costs. The Production Credit Office calculates that a tractor, the item of greatest expense, should be used 700-800 hours per year if the per hour cost is to be low enough to permit and justify the ordinary farm use of tractors.

The farmers with one or two horses, as well as the farmers without horses, did not increase their use of the machine stations over the previous year. It seems likely that these farms will retain their horses in preference to using tractors because the horse is used for purposes other than plowing, etc. The farmer needs his horse to get to market, drive to church, for lighter farm chores, and for pleasure. The larger farms with more than two horses might reduce their number of horses to one or two, thus releasing the acreage for an increase in other farm animals, grain, or root crops. The number of horses has increased from 180,000 in 1939 to 200,000 in 1950, or 11 per cent. It must be kept in mind, however, that Norway in an exporter of horses, and the fear of being cut off from petroleum supplies in wartime influences the number of horses.

Conclusion

It is difficult to determine which of the two types of stations is the better. However, in discussing this problem with a number of people connected with agriculture, the consensus of opinion was that the sole owner type was better, because the sole owner usually invests at least five per cent of his own capital in the enterprise, while in the cooperative type, the farmers need not make any initial capital investment. Instead they can borrow part of the funds and be subsidized for the remainder. It was also thought that the sole owners do the better job in handling and repairing their machines. These owners usually have a repair shop in conjunction with the machine station. This provides them with employment during the slack season in agriculture.

Numerically, the sole owner type increased more from 1948 to 1949 than the cooperative type, but the cooperative type gained more percentage-wise. It seems probable that the sole owner type of station will make the greater gains in the near future. So long as the custom rates associated with the use of the various types of farm and forest equipment are controlled by the Price Director, it is unlikely that farmers will realize much financial gain by forming cooperative stations. Cooperative stations are most apt to be formed in those areas where enterprising individuals cannot be found to organize stations of the sole owner type.

A likely development is seen in the possible consolidation of the weaker and ill-conceived stations of both types with the stronger ones. Also, internal expansion will likely occur and more kinds of equipment will become available as the membership increases.

There is a conflict between the long-established land policy of small owner-operated farms and the economic necessity, from the standpoint of the whole economy, to mechanize the agricultural industry to obtain greater absolute and per-man-hour productivity. The machine stations may enable the state to partially reconcile this conflict. Only about two per cent of the farms are large enough to support individually the modern machinery needed to give a high productivity per-man-hour of input. Not all of the remaining 98 per cent of the farms will avail themselves of the use of modern machinery because (1) of physical factors, such as isolation in the mountain districts and islands, terrain unsuitable for machinery, and lack of adequate roads in some areas, and (2) in many cases, it would not be economically profitable for the owners of smaller farms to use the machinery. In the latter case, family labor and a horse or two supply sufficient energy at a lower money cost. In those areas in which physical factors are favorable and the farms are of sufficient size to warrant the economic use of machinery, the machine station of either type will permit retention of the owner-operator form of land tenure (over 95 per cent) and, at the same time, increase man-hour productivity.

A committee of the Storting (Parliament) has recognized the need for increasing the average farm size from the present 10.5 acres of arable land if modern equipment is to be used profitably.⁶ A long-run program needs to be instituted to accomplish this objective.

More and better roads are needed in some parts of the country so that trucks can be used and equipment can be moved rapidly from station to farm and return.

There can be no question that the machine station is a permanent feature of Norwegian agriculture. However, in order to consolidate the gains that have been made and to fit agriculture in the long term program of the Norwegian economy, some structural changes need to be made in the agricultural sector of the economy.

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SAMPLE BIAS FROM THE ELIMINATION OF POULTRYMEN WHO DON'T KEEP FINANCIAL RECORDS*

STUDIES of poultry farms in New York state have usually involved the use of detailed questionnaires based on complete and detailed accounts kept by the farmer. This technique has been considered necessary

* *Jordbrukets Produksjons of Rasjonaliseringskomite av 1946, Instilling V.*

* The author is indebted to Professor L. B. Darrah, Department of Agricultural Economics, Cornell University, for material assistance in preparing this study for publication.

because of the nature of poultry farming, with its many movements of small numbers of birds into and out of the flock, frequent marketings and payments for eggs, and other detailed items which in the aggregate are of some import. It has been thought that sufficient accuracy could only be obtained by using the farmer's detailed day-by-day records. Of considerable concern to those in the poultry farm management field is the damage that may occur to a carefully chosen sample by the elimination of those farms which do not keep sufficiently complete financial records to allow the use of the detailed-type questionnaire. If these farms eliminated from the sample differ, on the average, from the main body of the sample, then a bias has been introduced which may throw doubt upon the representativeness and value of the results. A knowledge of the nature of the bias introduced by eliminating non-record-keeping poultrymen would be of value in preparing a sample of poultry farms.

In 1947, a detailed study of poultry farms was undertaken in New York state.¹ Farms were selected to represent the major types of poultry businesses in the main poultry areas of the state. Interviewers were provided with the two types of questionnaires. One was a detailed questionnaire requiring the use of complete financial records kept by the farmer and was concerned with the total poultry business, including costs and returns data. The other was a short questionnaire concerned with the current gross farm management factors or factors which could be recalled readily by a farmer. This latter questionnaire did not require the use of records kept by the farmer. The interviewers used the detailed questionnaire wherever the farmers had records of sufficient completeness and detail. It was only in those cases in which a farmer did not have the requisite records for a detailed questionnaire that the short questionnaire was used. Thus, from the data derived from identical questions on the long and short questionnaires it is possible to compare, for several factors, the farms which remained in the sample with these farms which were eliminated from the original sample due to a lack of records.

To facilitate comparison of the two groups of records, eight poultry farm management factors were selected as of basic importance. These are (1) average size of flock, (2) average size of farm business, (3) proportion of feed that was grain, (4) proportion of feed purchased, (5) breed of flock, (6) number of chicks started, (7) sex of chicks started, and (8) time chicks started. Because the short questionnaire relied upon both current practices and the farmer's memory for data, it was thought advisable to include in the comparison only factors which appeared least subject to a memory bias.

One bias introduced by elimination of farms was that of including a

¹ C. D. Kearn, *An Economic Analysis of New York Production of Eggs*, Unpublished Thesis, Cornell University Library, 1949.

less than proportional number of the smaller poultry flocks. Since other factors compared might easily be inter-related with size of flock, it was thought that comparisons would be facilitated by stratifying the data by this factor. This was done in all comparisons. The average size of flock for the short form records was calculated from information on the questionnaire by using a formula carefully tested against other data.²

For the detailed questionnaire group of farms, the average size of flock was 37 per cent greater than the average size of flock for the other farms. (Table 1). The tendency for the distribution to be weighted towards smaller flocks in the short questionnaire group of records holds within each strata. There is a greater tendency for the average in each strata of the short questionnaire group to fall below the mid-point of the strata than is the case for the detailed questionnaire group. These data show, then, that more small flocks were eliminated from the detailed questionnaire group due to a lack of financial records.

TABLE 1. SIZE OF BUSINESS

Size of Flock		Type of Record	Number of Records	Percent of Records	Average Productive Man Work Units
Range	Average				
100- 500 layers	261	short	133	47	360
	337	detailed	62	36	344
500-1,000 layers	693	short	92	33	441
	752	detailed	56	33	396
1,000-1,500 layers	1,166	short	32	11	491
	1,210	detailed	33	19	478
Over 1,500 layers	2,130	short	25	9	693
	2,607	detailed	21	12	526
Total	670	short	282	100	431
	917	detailed	172	100	409

In contrast to the differences in average flock size between the two groups of farms, the data indicate that the average size of farm business, as reflected in total productive-man-work units, is somewhat greater for the short questionnaire farms than for the detailed questionnaire farms. This is true for each stratification, as well as for the total. The tendency towards substantially smaller average flocks and larger average total businesses for the short questionnaire farms indicates that bias to some extent derives from the elimination of a larger proportion of flocks on farms with relatively more emphasis on farm enterprises other than poultry, rather than from elimination of just small farms.

The short questionnaire group contains a greater proportion of heavy

² J. W. Mellor, *A Short Form Survey Method for Poultry Studies*, Unpublished Thesis, Cornell University Library, 1951.

breed flocks and a smaller proportion of leghorn flocks than does the detailed questionnaire group. The difference in proportions of mixed flocks is not so great. This evidence helps substantiate the belief that the detailed questionnaire sample was biased by the elimination of too many farms on which poultry is a relatively more subsidiary farm enterprise. Many New York poultrymen in this class tend to concentrate to a greater than average extent on heavy breed birds. The greater proclivity towards leghorn flocks in the detailed questionnaire group is very strongly marked in the strata containing the largest flocks. It becomes less and less marked as the size of flock decreases. This seems logical in that smaller flocks are usually a subsidiary farm enterprise, whether they fall in the short or detailed questionnaire grouping, and thus tend to be more alike in this respect.

Data regarding the proportions of feed purchased show both groups of farms purchasing about 90 per cent of their requirements. There is some difference between the two groups of farms in regard to the per cent of feed that was grain. The farms in the detailed questionnaire group fed 5 per cent more grain than the farms in the short questionnaire group. This reflects the greater proportion of heavy breed flocks in the short questionnaire sample. New York studies show that heavy breed flocks use a smaller proportion of grain than do the leghorn flocks.³

As might be expected, approximately the same relationship exists between the two groups of records in regard to numbers of chicks started as in regard to number of layers on the farm. The detailed sample started about 36 per cent more chicks than did the short questionnaire sample. Practically the same proportion of farms in the detailed questionnaire group and short questionnaire group started all pullet flocks. The detailed questionnaire group, however, had fewer farms starting both pullets and straight run flocks and more farms starting straight run flocks than was the case for the short questionnaire group.

A somewhat larger proportion of the short questionnaire farms started their birds later in the season than did the other farms. A higher proportion of the detailed questionnaire farms started birds over a series of months. The latter is further evidence that the short questionnaire grouping includes a more than proportional number of farms on which poultry is a relatively subsidiary enterprise, and the former indicates less alertness on the part of the farmers in the short form group in keeping up on current poultry husbandry trends.

³ L. B. Darrah, *Cost and Returns from the Laying Flock on Commercial Poultry Farms, 1940-41*, Cornell University Agricultural Experiment Station Bulletin 802, November, 1943, p. 14.

C. D. Kearn, *Commercial Poultry-Farm Management in New York State, 1946-47*, Cornell University Agricultural Experiment Station Bulletin 864, October, 1950, p. 9.

New York studies have shown that under most conditions, farmers who start their birds early in the spring are more successful than those who start birds late in the spring.⁴ It would be logical to expect that those who do not keep adequate records would be slower in realizing the value of adopting such practices.

It is difficult to ascertain how much of this difference between the two groups is due to eliminating more farms on which poultry is a relatively subsidiary enterprise and how much is due to eliminating a greater proportion of those farms managed by farmers less alert to new trends and practices. Both factors are undoubtedly involved.

Conclusion

Evidence from this study indicates that a sample may be biased by the use of a questionnaire requiring the use of complete and detailed financial records kept by the farmer. The major bias appears to arise from eliminating a more than proportional number of those farms on which poultry is relatively more of a subsidiary enterprise, a more than proportional number of the smaller flocks, and a more than proportional number of the less alert poultry farmers. All these factors are, of course, interrelated. The actual damage occurs because some of the factors of importance in a study of poultry farm management are inter-serially associated with these biasing factors. Thus, biasing a sample in this manner may affect the over-all picture of the organization and operation of the poultry enterprises. This bias is of great enough magnitude to merit serious consideration when selecting a sample for a study in which it is necessary to get an accurate picture of the total poultry industry in a given area. For many types of study—for example, one in which it is desired to concentrate on the practices of the better farmers, or to analyze a specific practice—such a bias may be of little consequence. It may even prove desirable, under some conditions, to have a sample restricted to poultrymen who keep records adequate for the purposes of the detailed questionnaire. The individual researcher must first be cognizant of the biasing elements. Then, he must decide under what conditions they will so compromise his results as to necessitate the use of other research techniques to counteract or eliminate the biasing factors.

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⁴C. D. Kearn, *Seasonal Costs and Returns in Producing Eggs*, New York, 1946-47, Cornell University Agricultural Experiment Station Bulletin 863, November, 1950, p. 15.

and do not have to depend upon congressional appropriations. They have the experts and can issue excellent reports for the edification of government officials and public discussion. No group of part-time persons will ever accept the political responsibilities necessary to make such an organization a valuable asset to our political process. In fact, witness the present uncertain status of the Council of Economic Advisors and their reports, even though they are attached to the office of the President.

Now, back to the first view of planning. To many of the more avid advocates of planning, this is no planning at all.⁵ It merely becomes a part of the normal process of staff work in an executive agency. The critical question is whether this, if done well, would be useful and improve agricultural policy. The author believes that it will, and that this type of planning can be improved within our present governmental organization. This type of planning essentially calls for better staff agencies to help facilitate better decision at the crucial points—the Secretary's office when he formulates proposals for the Chief Executive and/or legislative consideration, and in the legislature. This planning function can be useful only when the administrative channels from the field offices and land-grant colleges effectively pass research and administrative experience to these points of decision making, and when there is a staff agency at the decision point capable of analyzing and evaluating it in light of the policy decision in question. It is doubtful if it would be desirable to call the staff of the Secretary's office that evaluates and analyzes this material a planning agency under any conditions. Witness the sad fate of the Bureau of Agricultural Economics as a planning agency. However, regardless of what it is called, the planning function chosen here can and must be carried out as a normal phase of public administration. Let us examine the effects Mr. Parks' proposed planning group would have if they were inserted into this position and given this function.

The USDA's Place in the Government Planning Function

The USDA has been accused of being the farmers' department, and it has been stated by congressmen that if it is not thinking of the farmers' interest, it should. Yet, the fact remains that the Department, because of our strange political party system and the congressional committee system, bears the burden of representing the broader view on agricultural policy to the major points of decision making. This is inevitable as long as the Department is responsible to a Chief Executive elected by votes of the public. At the same time, it also must be the Department, or some of its agencies, which brings the problems of the low-income farmer to

⁵ See Mr. Tugwell's comments on such views and people who espouse them in the book review cited.

these same points of decision making, both because of their political ineffectiveness and the fact that they are not represented by farm organizations. And the Department probably is also in the best position to bring the results of research by the land-grant colleges to those same points of decision making.

Admittedly, this process is imperfect and has not resulted in agricultural policies which fit Mr. Parks' guidelines. But the writer wonders if the planning agency he suggests would be more effective? It is doubtful. In fact, it might destroy the effectiveness of these channels entirely. The planning process must be a part of the political process. Unless this is so, the plans will either stand no chance of adoption or prevent accountability of the planners to the public. The proposed agency would not be politically responsible and probably would do damage on both counts.

Farm organizations are organized to represent farmers, or at least certain groups of farmers. They usually have resisted attempts to bring agricultural policy into party politics.⁶ To move them into a strategic planning agency in the Secretary's office would not change their attitudes. Its major result undoubtedly would be to put them into a strategic position to block the broader interest considerations before they reached the legislators or perhaps even the Chief Executive, and to effectively block any agency programs which did not coincide with theirs. Putting representatives of strong farm organizations into a planning agency will merely improve their strategic power, not their public political responsibility, as they still will have the same membership to please.

The same is true of college professors. It is possible that they might learn more about political feasibility and agricultural policy, but since they will not depend on politics for their jobs they would also continue largely to ignore them as they have in the past.

As for Congress—there is indeed an interesting thought. Of course, it is unlikely a planning agency would be allowed to exist at all. Few, if any, have survived their scrutiny in the past. Even if they did, and they had congressional representatives as members, why would the congressmen change their attitudes about the Department's function as the farmers' representative? They probably wouldn't and another effective block would be established to retard the movement of information to the points of decision making. Of course, they would have a political sensitivity, largely to rural areas and commercial agricultural interests.

The most important effects would be upon the agencies within the Department and their functions in the planning process.

One of the major factors leading to the demise of the BAE as a planning agency was the feeling of other agency administrators that their

⁶ See Charles Hardin's article on this matter in the November, 1950, issue of *This Journal*.

administrative experience would be blocked from the Secretary's office and be largely ignored. If these agencies were forced to submit this experience to the suggested heterogeneous planning agency, the block would be complete. If rival legislators followed their usual actions, all the research and administrative experience involving low income farmers, consumer interests, and Negroes would be effectively withheld from the points of decision making. Farm organization representatives would naturally and understandably try to prevent any part of the planning from containing ideas to which they had previously registered opposition.⁷ Thus, the administrative and research experience needed to develop sound programs would be blocked off from the point where it could be used. In its place would be substituted a group with widely differing basic values who are supposed to effect a compromise that can be presented to the legislative point of decision making. Even if the report of the planning agency was submitted by the Secretary for consideration it surely would not be politically feasible. If he refused to submit it or altered it, there would be loud cries of "politics" and unpleasant minority reports would be issued in a deadly hail.

Of course, all of these groups must compromise if any policy is to emerge, but the place for this compromise is in Congress. The Department of Agriculture and the Secretary's office are not the place for such battles. They have other equally important functions to serve.

There should be little question that the Department is a major policy making force, and rightfully so. A large portion of our agricultural policy is determined by the administrative discretion within the broad acts authorized by Congress. A major portion of the responsibility for agricultural policy must rest with the operating chief as he administers within the framework of law and yields to the various pressures and interests as they arise. Planning and policy cannot be separated; the responsibility must rest on the same persons, and to some extent, they are the parts of the same operation.

As long as we recognize that the Department of Agriculture is an important policy making agency, we must recognize concurrently that its administrative channels must be kept open to facilitate the planning it must do.

There still remains the major unsolved problem of improving the planning function at that all-important point of decision making, the legislature. This is a problem that runs throughout our government and is not exclusively agriculture's. It certainly will not be solved by putting additional blocks between the legislative and administrative agencies, a major source of information to the legislature.

⁷ There is enough difference between the major farm organizations to make some interesting squabbles that would prevent any effective planning.

The Hope Ahead

If an agricultural planning agency in the Secretary's office composed of congressmen, farm organization leaders, and professors will not improve our agricultural policies toward the guidelines, is there no hope?

It would seem that perhaps a ray of hope appeared on the horizon two years ago, but in a form that was overlooked by political scientists and agricultural economists. I refer, of course, to Mr. Brannan's plan which aroused such a storm of controversy throughout the nation. This is no time to debate again the economics of the plan, about which most agricultural economists agreed. Leaving aside the economics of the proposal, it did something few other proposed agricultural policies have been able to achieve. It became not a debated program, but a party program. Members of Congress were obliged to campaign for or against it as a part of the party platform in many states, thus subjecting agricultural policy to broader opinion and vote than is usually the case. That it lost is immaterial, for it may have started a trend which will go far in solving the problem of getting the broader interest into agricultural policies.

In summary, the writer feels that it will probably do little good to strengthen the planning mechanism of the Department of Agriculture under our present party system. The main improvement must come from a more programmatic party system and better work by congressional committees dealing with agricultural policies.⁸ When these have been achieved, the planning functions of the Department may prove to be more effective than they now appear.

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AGRICULTURAL MACHINE STATIONS IN NORWAY*

INDIVIDUALLY and cooperatively owned machine stations provide one important means for dealing with the critical situation in Norwegian agriculture. These strategically located stations, financially aided by the state, own modern farm equipment with which they do custom work for individual operators of small farms who cannot profitably own the necessary machinery. Their development should have a potent effect upon agricultural production and upon the problems caused by (1) the

* There is an interesting trend in the establishment of permanent professional staff agencies for congressional committees. These would fall under the author's definition of planning agencies for this highly important point of decision making. Perhaps here is the place that a planning agency would improve our policies most under present conditions.

* Material for this article was obtained in Norway, while on the Olaf Halvorson Fellowship of the American-Scandinavian Foundation, 1949-50.

acute shortage of farm laborers, (2) the increase of population and (3) the need to fit agriculture, as a sector of the economy, into the long-term program of the Labor government.

Today, there is an acute shortage of farm labor in Norway because:

(1) Since 1945, between 35,000 and 40,000 farm workers, about nine per cent of the farm labor force in 1945, have gone into industry. The recent flight from agriculture has been about twice as rapid as in previous years.

(2) In 1948, the length of the working day for hired agricultural labor was shortened to eight hours by legislation, although the contract between the Land and Forest Workers' Union and the Agricultural Employers' Association had this provision for some time. This reduction in the work day amounted to an additional loss of labor, for only a portion of the farm laborers were covered by the contract.

(3) The passage of the three-week vacation law in 1947 was particularly harmful to agriculture, not only because of the time lost, but because Norwegians insist on taking their vacations during the summer months.

During this period of significant reduction in agricultural labor supply and a shortening of work time, the population increased by 258,000 or 8.8 per cent above 1938. A factor more important than the absolute increase in population, is that the proportion of the population able to work is increasing at a slower rate. In the 1930's, the age group able to work increased by nearly 30,000 annually. Now the increase is about 4,000 per year, and in the future, it is likely to be less.¹ The necessary future expansion of agricultural production cannot be based on manpower reserves, as there is full employment; nor on new supplies of labor, but rather on a thorough rationalization of the industry.

The Labor government realized the necessity for investment in this sector of the economy to (1) take up the 4.5 per cent loss in real capital in agricultural machinery during World War II,² (2) increase production to keep pace with the growing population, and (3) rationalize the industry so that in the future it would take a smaller percentage of the total labor force while at the same time increasing production.

Table I shows the gross investment program for agricultural machinery and equipment in the national budgets for 1947-49 inclusive.

The estimated average annual gross investment for agriculture as a whole for 1949-1952 is 60 million dollars.³ The gross investment in agricultural machinery and equipment in the next few years probably will be as

¹ *Memorandum on A Norwegian Long Term Program*, Economic Cooperation Administration, pp. 14-15.

² *Ibid.*, p. 10.

³ *European Recovery Program, Norway-Country Study*, Economic Cooperation Administration, February, 1949, Washington, D.C., p. 37.

TABLE I. GROSS INVESTMENT IN AGRICULTURAL MACHINERY AND EQUIPMENT IN 1947-49 INCLUSIVE

Year	Million Kroner	Million Dollars
1947	47	9.46
1948	50	10.06
1949	57	11.67

Source: Norwegian National Budget 1949, p. 51.

(The dollar figure is based on the pre-devaluation rate of 4.97 kroner per dollar because import of machinery and equipment was figured on that basis.)

great as in the post-war years. It may be even greater if the programmed imports of the Norwegian government give an accurate indication of future trends. Imported tractors and agricultural machinery were to be increased in 1949-50 by 20 per cent over 1948-49.

Government Credit Program

The Norwegian government was not without experience in the financial and organizational problems of giving loans and subsidies to farmers to purchase equipment on a collective basis. From 1918 to 1928, the state gave subsidies to farmers who owned the equipment on a cooperative basis, and from 1917 to 1928 the Norwegian government made loans for the purchase of farm machinery. In 1946, the legislature amended the law of 1936, under which the Production Credit Office for Agriculture (Driftskredittkassen for Jordbruket) was operating, to permit this agency to lend directly or indirectly to two types of machine stations and to give subsidies for the purchase of agricultural equipment. As much of the machinery, particularly tractors, had to be imported, and, at the time the program was instituted, the world's supply of machines was limited, it was essential that the machine stations be organized properly so as to use the equipment to the optimum degree. By so doing, the fixed expenses would be less per working hour, and the machines would more likely be handled by skilled workers.

The machine stations may be organized either as (1) cooperative machine purchasing societies, in which the machines are owned jointly by farmer members, or as (2) machine holders, in which the machines are owned by single individuals who contract with a number of farmers to do their work at fixed rates.

The Production Credit Office is now granting loans so that each member of a cooperative purchasing society is granted a loan corresponding to the portion of the purchase expenses assigned to him within the cooperative. The cooperative machine station may borrow up to 70 per cent of the purchase price of the machines and receive a subsidy up to 30 per cent of the purchase price, but not over 2,000 kroner per full dekar

owned by the members. Under certain circumstances, therefore, the cooperative society may obtain 100 per cent of the purchase price, part by loan and part by subsidy.

The stations operate under the technical guidance and supervision of the Production Credit Office. To obtain the 30 per cent subsidy, the area or territory of operation for both the cooperative station and the sole owner type must be approved by the local (county) farmers' council. All the farmers in these areas have the right to become members of the cooperative station or to hire the services of the station if the machinery is owned by a single individual.

An individual wishing to be the sole owner of a station may borrow either from a Cooperative Credit Association or directly from the Production Credit Office. For a loan from a Cooperative Credit Association, approval of both the Association's Board of Directors and the Production Credit Office has to be obtained. For a direct loan from the Production Credit Office, approval of the director as well as the local farmers' council and the Provincial Agricultural Society is needed.

The sole owner of a machine station may borrow up to 10,000 kroner and, with the approval of the State Agricultural Department, may obtain a larger loan. A loan from a Cooperative Credit Association may be up to 75 per cent of the purchase price, but not over 200 kroner per membership share. A loan directly from the Production Credit Office may be up to 70 per cent of the purchase price. When a loan is made directly from the Production Credit Office to the individual, he must contribute at least five per cent of his own capital to the purchase of the machine. In the regulations for loans to machine stations of the sole owner type, the Agricultural Department has stipulated that special note be taken of the individual's personal qualities. He must possess the skill and will to develop his machinery station. He also must have professional education as a farmer and have had some practice as a mechanic. Separate contracts concerning the work are made between the sole owner of the machine and the farmers. For the security of the station and the stability of the arrangement, the farmers who intend to hire the services of the station, shall, as a rule, guarantee at least half of the sole owner's liabilities to the Production Credit Office.

The amount of the subsidy depends upon the area of arable land the station will work. In the case of the subsidy to a cooperative machine station, the cultivatable land of the members of the cooperative is the deciding factor. In the case of the sole owner, either the area of cultivatable land of the farmer who guarantees for, and signs contracts with, the individual owner; or the decision of the farmers' council is used when the individual does not have any guarantors for the loan.

The state subsidy is given to the machine station at the time the

machine is purchased, but the subsidy (and the loan, if any) must be paid back into the Production Credit Office in semi-annual installments within 10 years. After 10 years of operation, the station, with the approval of the Production Credit Office, may use the funds (equal to the amount of the subsidy) for purchase of new equipment or use in some other manner. A machine station that has received a state subsidy may not, in the course of the first 10 years, stop operation nor sell any of the machinery or equipment without the approval of the Production Credit Office. If a station operates contrary to these regulations, the Production Credit Office may refuse to pay back to the station all or a portion of the subsidy funds that the station pays to the Office in semi-annual installments. The same applies if the Production Credit Office finds that the station is not operating according to the agreement which was made to obtain a loan or subsidy.

The requirement that the amount of the subsidy be paid to the Production Credit Office over a 10-year period, even though it is to be returned to the stations at the end of the 10-year period if they are properly operated, is necessary during the life of the machines for purposes of operational control. In the case of stations of the sole owner type, many of the applicants have paid cash for their share of the purchase price and obtained a 30 per cent subsidy. If the Production Credit Office did not have control through the above mentioned device, the sole owner might do as he wished and in effect, immediately secure a machine at a 30 per cent reduction in price.

For the two-year period from July 1, 1946 to July 1, 1948, the Production Credit Office made loans for a total of 2,000,000 kroner (about \$400,000 at the pre-devaluation rate). During the fiscal year 1948-49, loans totaled 4,000,000 kroner (about \$800,000) and subsidies 3,000,000 kroner (about \$600,000).

At pre-devaluation prices, a station needed to invest between 15,000 and 20,000 kroner, depending upon the needs of the locality to obtain the necessary equipment. The amount required at the present rate of exchange is somewhat higher, as 34 per cent of the programmed imports of agricultural machinery is to be from the U.S.

Growth of the Stations

In many districts, fundamental organizational work already has been carried out, the farmers' council having marked off zones of operation for the separate stations. Five of the provinces, in which agriculture is important, have established main central stations for the entire district, at which the more costly machines are kept.

The number of machine stations has grown rapidly since 1946 for a number of reasons: (1) the loan and subsidy program, (2) better financial

position of farmers, and, (3) the loss of hired farm labor to industry. Table II below shows the growth of the two types of machine stations.

TABLE II. GROWTH OF MACHINE STATIONS, 1947-49

Year	Total Number	Annual Increase	Type of Station			
			Cooperative		Sole Owner	
			Number	% of Total	Number	% of Total
July 1947	55	—	—	—	—	—
July 1948	592	537	139	23.6	453	76.4
July 1949	1,208	616	343	28.4	865	71.6

Table II shows the rapid growth starting in the second year and continuing through the third year of the program. The future rate of growth is limited by the position of agriculture in the investment program of the national budget, and by Norway's foreign trade balance. Although it is likely that agriculture's position in the investment budget will not change appreciably until completion of the long-term program in 1952-1953, it seems probable that the rate of growth will not continue at the high level established in the past two years. As of December 15, 1949, there were 1,400 stations. Officials at the Production Credit Office calculate that the total number within the next few years would reach 2,000. They look for an increase in the number in northern Norway and in the west coast area north from Stavanger.

How Successfully Are They Functioning?

How are the machine stations working? Are they accomplishing the goals set up? What unforeseen problems have arisen?

These are difficult questions to answer at present because insufficient time has transpired to note any significant changes in the methods used, and because no systematic wide-scale study has as yet been made of the operation of the stations. However, a study of three selected stations was made in 1949 by a student at the Agricultural College of Norway at Aas.⁴ The number studied is too small to provide a basis for definite conclusions, but the study does indicate how these machine stations are operating. These particular stations have been in operation since the beginning of the program.

The type of machines and equipment included: rubber tire tractors, plows, cultivators, three types of harrows, threshing machines, binders, hay mowers, potato planters and diggers, and cross-cut and timber saws.

⁴ *Tre Maskinstasjoners Arbeidsinnsats og Økonomiske Resultat i 1948, Norges Landsbrukshøgskole, Aas.*

Greatest emphasis is placed on those machines needed for spring work. The stations are not used as much for reaping as for threshing grains because the women and children of the family can be used to cut and bind the grain.

In the three stations studied, the machines had the effect of reducing the amount of hired help for 35 per cent of the farmers and 17 per cent were able to do more difficult work. However, the working day was not shortened for any of them. There was no change in the proportions of the various crops nor any change from animal production to plant production. It is likely that insufficient time has elapsed to bring about any shift in the type of farming.

Fifty-six per cent reported favorable experience with the stations, while 35 per cent answered that it was difficult to get the necessary machines when needed. It was profitable to use the station for 65 per cent, while 26 per cent said it was too expensive.

It was found that small farmers with less than 20 dekar (about five acres) of arable land were not particularly interested in using the machine stations. Fifty per cent of the farmers served by the three stations used the machinery 10 hours or less in 1949. The Production Credit Office estimates that each farmer within the respective station areas must use the station between 30 and 40 hours per year if the station is to operate at a profit. Only the larger farms are able to profitably use the station this number of hours.

The average machine station can service 800 to 1,000 dekar (200 to 250 acres) of arable land plus an equal or larger area of forest land upon which some machinery can be used. The important factors are size of the individual farms which make up the total area and shape of the fields. The minimum area of 800 to 1,000 dekar should be composed of not more than 20 to 25 separate farms. Importance of the length of the field is shown in a study by the Production Credit Office, which indicates that the cost of plowing a field 200 meters long is about one-half the cost per dekar as a field 45 meters in length. For plowing and cultivating, the cost declines from 11.70 kroner per dekar for fields 45 meters in length to 6.30 kroner per dekar for fields 200 meters long.⁵

Transportation time for moving machinery from the station to the farm and return, or from farm to farm accounted for 10 per cent of the total effective work and transportation time. The Price Director in each province sets the price for machinery transport to and from the farm on a per kilometer basis with a certain minimum charge. The Price Director also sets the price that the machine station, cooperative or sole owner, may

⁵ "Noen resultater fra tidsobservasjoner for plying og harving av Oleif Bones," *Norsk Landbruk*, 1949, number 8, pp. 144-146. See also *Norsk Landbruk*, 1948, number 2, p. 29.

charge for the use of the various kinds of equipment. The charge is based on the cost of the machine and current expenses, including labor costs. The Production Credit Office calculates that a tractor, the item of greatest expense, should be used 700-800 hours per year if the per hour cost is to be low enough to permit and justify the ordinary farm use of tractors.

The farmers with one or two horses, as well as the farmers without horses, did not increase their use of the machine stations over the previous year. It seems likely that these farms will retain their horses in preference to using tractors because the horse is used for purposes other than plowing, etc. The farmer needs his horse to get to market, drive to church, for lighter farm chores, and for pleasure. The larger farms with more than two horses might reduce their number of horses to one or two, thus releasing the acreage for an increase in other farm animals, grain, or root crops. The number of horses has increased from 180,000 in 1939 to 200,000 in 1950, or 11 per cent. It must be kept in mind, however, that Norway is an exporter of horses, and the fear of being cut off from petroleum supplies in wartime influences the number of horses.

Conclusion

It is difficult to determine which of the two types of stations is the better. However, in discussing this problem with a number of people connected with agriculture, the consensus of opinion was that the sole owner type was better, because the sole owner usually invests at least five per cent of his own capital in the enterprise, while in the cooperative type, the farmers need not make any initial capital investment. Instead they can borrow part of the funds and be subsidized for the remainder. It was also thought that the sole owners do the better job in handling and repairing their machines. These owners usually have a repair shop in conjunction with the machine station. This provides them with employment during the slack season in agriculture.

Numerically, the sole owner type increased more from 1948 to 1949 than the cooperative type, but the cooperative type gained more percentage-wise. It seems probable that the sole owner type of station will make the greater gains in the near future. So long as the custom rates associated with the use of the various types of farm and forest equipment are controlled by the Price Director, it is unlikely that farmers will realize much financial gain by forming cooperative stations. Cooperative stations are most apt to be formed in those areas where enterprising individuals cannot be found to organize stations of the sole owner type.

A likely development is seen in the possible consolidation of the weaker and ill-conceived stations of both types with the stronger ones. Also, internal expansion will likely occur and more kinds of equipment will become available as the membership increases.

There is a conflict between the long-established land policy of small owner-operated farms and the economic necessity, from the standpoint of the whole economy, to mechanize the agricultural industry to obtain greater absolute and per-man-hour productivity. The machine stations may enable the state to partially reconcile this conflict. Only about two per cent of the farms are large enough to support individually the modern machinery needed to give a high productivity per-man-hour of input. Not all of the remaining 98 per cent of the farms will avail themselves of the use of modern machinery because (1) of physical factors, such as isolation in the mountain districts and islands, terrain unsuitable for machinery, and lack of adequate roads in some areas, and (2) in many cases, it would not be economically profitable for the owners of smaller farms to use the machinery. In the latter case, family labor and a horse or two supply sufficient energy at a lower money cost. In those areas in which physical factors are favorable and the farms are of sufficient size to warrant the economic use of machinery, the machine station of either type will permit retention of the owner-operator form of land tenure (over 95 per cent) and, at the same time, increase man-hour productivity.

A committee of the Storting (Parliament) has recognized the need for increasing the average farm size from the present 10.5 acres of arable land if modern equipment is to be used profitably.⁶ A long-run program needs to be instituted to accomplish this objective.

More and better roads are needed in some parts of the country so that trucks can be used and equipment can be moved rapidly from station to farm and return.

There can be no question that the machine station is a permanent feature of Norwegian agriculture. However, in order to consolidate the gains that have been made and to fit agriculture in the long term program of the Norwegian economy, some structural changes need to be made in the agricultural sector of the economy.

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SAMPLE BIAS FROM THE ELIMINATION OF POULTRYMEN WHO DON'T KEEP FINANCIAL RECORDS*

STUDIES of poultry farms in New York state have usually involved the use of detailed questionnaires based on complete and detailed accounts kept by the farmer. This technique has been considered necessary

* *Jordbrukets Produksjons of Rasjonaliseringskomite av 1946, Instilling V.*

* The author is indebted to Professor L. B. Darrah, Department of Agricultural Economics, Cornell University, for material assistance in preparing this study for publication.

because of the nature of poultry farming, with its many movements of small numbers of birds into and out of the flock, frequent marketings and payments for eggs, and other detailed items which in the aggregate are of some import. It has been thought that sufficient accuracy could only be obtained by using the farmer's detailed day-by-day records. Of considerable concern to those in the poultry farm management field is the damage that may occur to a carefully chosen sample by the elimination of those farms which do not keep sufficiently complete financial records to allow the use of the detailed-type questionnaire. If these farms eliminated from the sample differ, on the average, from the main body of the sample, then a bias has been introduced which may throw doubt upon the representativeness and value of the results. A knowledge of the nature of the bias introduced by eliminating non-record-keeping poultrymen would be of value in preparing a sample of poultry farms.

In 1947, a detailed study of poultry farms was undertaken in New York state.¹ Farms were selected to represent the major types of poultry businesses in the main poultry areas of the state. Interviewers were provided with the two types of questionnaires. One was a detailed questionnaire requiring the use of complete financial records kept by the farmer and was concerned with the total poultry business, including costs and returns data. The other was a short questionnaire concerned with the current gross farm management factors or factors which could be recalled readily by a farmer. This latter questionnaire did not require the use of records kept by the farmer. The interviewers used the detailed questionnaire wherever the farmers had records of sufficient completeness and detail. It was only in those cases in which a farmer did not have the requisite records for a detailed questionnaire that the short questionnaire was used. Thus, from the data derived from identical questions on the long and short questionnaires it is possible to compare, for several factors, the farms which remained in the sample with these farms which were eliminated from the original sample due to a lack of records.

To facilitate comparison of the two groups of records, eight poultry farm management factors were selected as of basic importance. These are (1) average size of flock, (2) average size of farm business, (3) proportion of feed that was grain, (4) proportion of feed purchased, (5) breed of flock, (6) number of chicks started, (7) sex of chicks started, and (8) time chicks started. Because the short questionnaire relied upon both current practices and the farmer's memory for data, it was thought advisable to include in the comparison only factors which appeared least subject to a memory bias.

One bias introduced by elimination of farms was that of including a

¹ C. D. Kearl, *An Economic Analysis of New York Production of Eggs*, Unpublished Thesis, Cornell University Library, 1949.

less than proportional number of the smaller poultry flocks. Since other factors compared might easily be inter-related with size of flock, it was thought that comparisons would be facilitated by stratifying the data by this factor. This was done in all comparisons. The average size of flock for the short form records was calculated from information on the questionnaire by using a formula carefully tested against other data.²

For the detailed questionnaire group of farms, the average size of flock was 37 per cent greater than the average size of flock for the other farms. (Table 1). The tendency for the distribution to be weighted towards smaller flocks in the short questionnaire group of records holds within each strata. There is a greater tendency for the average in each strata of the short questionnaire group to fall below the mid-point of the strata than is the case for the detailed questionnaire group. These data show, then, that more small flocks were eliminated from the detailed questionnaire group due to a lack of financial records.

TABLE 1. SIZE OF BUSINESS

Size of Flock		Type of Record	Number of Records	Percent of Records	Average Productive Man Work Units
Range	Average				
100- 500 layers	261	short	133	47	360
	337	detailed	62	36	344
500-1,000 layers	693	short	92	33	441
	752	detailed	56	33	396
1,000-1,500 layers	1,166	short	32	11	491
	1,210	detailed	33	19	478
Over 1,500 layers	2,130	short	25	9	693
	2,607	detailed	21	12	526
Total	670	short	282	100	431
	917	detailed	172	100	409

In contrast to the differences in average flock size between the two groups of farms, the data indicate that the average size of farm business, as reflected in total productive-man-work units, is somewhat greater for the short questionnaire farms than for the detailed questionnaire farms. This is true for each stratification, as well as for the total. The tendency towards substantially smaller average flocks and larger average total businesses for the short questionnaire farms indicates that bias to some extent derives from the elimination of a larger proportion of flocks on farms with relatively more emphasis on farm enterprises other than poultry, rather than from elimination of just small farms.

The short questionnaire group contains a greater proportion of heavy

²J. W. Mellor, *A Short Form Survey Method for Poultry Studies*, Unpublished Thesis, Cornell University Library, 1951.

breed flocks and a smaller proportion of leghorn flocks than does the detailed questionnaire group. The difference in proportions of mixed flocks is not so great. This evidence helps substantiate the belief that the detailed questionnaire sample was biased by the elimination of too many farms on which poultry is a relatively more subsidiary farm enterprise. Many New York poultrymen in this class tend to concentrate to a greater than average extent on heavy breed birds. The greater proclivity towards leghorn flocks in the detailed questionnaire group is very strongly marked in the strata containing the largest flocks. It becomes less and less marked as the size of flock decreases. This seems logical in that smaller flocks are usually a subsidiary farm enterprise, whether they fall in the short or detailed questionnaire grouping, and thus tend to be more alike in this respect.

Data regarding the proportions of feed purchased show both groups of farms purchasing about 90 per cent of their requirements. There is some difference between the two groups of farms in regard to the per cent of feed that was grain. The farms in the detailed questionnaire group fed 5 per cent more grain than the farms in the short questionnaire group. This reflects the greater proportion of heavy breed flocks in the short questionnaire sample. New York studies show that heavy breed flocks use a smaller proportion of grain than do the leghorn flocks.³

As might be expected, approximately the same relationship exists between the two groups of records in regard to numbers of chicks started as in regard to number of layers on the farm. The detailed sample started about 36 per cent more chicks than did the short questionnaire sample. Practically the same proportion of farms in the detailed questionnaire group and short questionnaire group started all pullet flocks. The detailed questionnaire group, however, had fewer farms starting both pullets and straight run flocks and more farms starting straight run flocks than was the case for the short questionnaire group.

A somewhat larger proportion of the short questionnaire farms started their birds later in the season than did the other farms. A higher proportion of the detailed questionnaire farms started birds over a series of months. The latter is further evidence that the short questionnaire grouping includes a more than proportional number of farms on which poultry is a relatively subsidiary enterprise, and the former indicates less alertness on the part of the farmers in the short form group in keeping up on current poultry husbandry trends.

³ L. B. Darrah, *Cost and Returns from the Laying Flock on Commercial Poultry Farms, 1940-41*, Cornell University Agricultural Experiment Station Bulletin 802, November, 1943, p. 14.

C. D. Kearn, *Commercial Poultry-Farm Management in New York State, 1946-47*, Cornell University Agricultural Experiment Station Bulletin 864, October, 1950, p. 9.

New York studies have shown that under most conditions, farmers who start their birds early in the spring are more successful than those who start birds late in the spring.⁴ It would be logical to expect that those who do not keep adequate records would be slower in realizing the value of adopting such practices.

It is difficult to ascertain how much of this difference between the two groups is due to eliminating more farms on which poultry is a relatively subsidiary enterprise and how much is due to eliminating a greater proportion of those farms managed by farmers less alert to new trends and practices. Both factors are undoubtedly involved.

Conclusion

Evidence from this study indicates that a sample may be biased by the use of a questionnaire requiring the use of complete and detailed financial records kept by the farmer. The major bias appears to arise from eliminating a more than proportional number of those farms on which poultry is relatively more of a subsidiary enterprise, a more than proportional number of the smaller flocks, and a more than proportional number of the less alert poultry farmers. All these factors are, of course, interrelated. The actual damage occurs because some of the factors of importance in a study of poultry farm management are inter-serially associated with these biasing factors. Thus, biasing a sample in this manner may affect the over-all picture of the organization and operation of the poultry enterprises. This bias is of great enough magnitude to merit serious consideration when selecting a sample for a study in which it is necessary to get an accurate picture of the total poultry industry in a given area. For many types of study—for example, one in which it is desired to concentrate on the practices of the better farmers, or to analyze a specific practice—such a bias may be of little consequence. It may even prove desirable, under some conditions, to have a sample restricted to poultrymen who keep records adequate for the purposes of the detailed questionnaire. The individual researcher must first be cognizant of the biasing elements. Then, he must decide under what conditions they will so compromise his results as to necessitate the use of other research techniques to counteract or eliminate the biasing factors.

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⁴C. D. Kearn, *Seasonal Costs and Returns in Producing Eggs*, New York, 1946-47, Cornell University Agricultural Experiment Station Bulletin 863, November, 1950, p. 15.

A SUGGESTED METHOD OF BUYING MARKET MILK WITH PREMIUMS FOR LOW BACTERIA COUNT*

THE bacteria count is commonly recognized as the best objective test to indicate how much care has been given in the production and handling of milk. Milk with a low bacteria count has a greater commercial value because of its wholesomeness and its superior keeping quality. Increasing intermarket shipment of milk in Montana combined with three times per week delivery of milk to homes means that some milk is held by distributors for longer periods of time than was the case a few years ago. The dairy industry now requires milk which can be held for two or three days prior to consumer purchase plus another two to three days by the consumer without any noticeable change in flavor.

In most Montana markets, no distinction is made between milk which has a low bacteria count and milk which has a high bacteria count, except that by law it must have a count of less than 200,000 per m.l. to qualify for sale to be processed for market milk. Under this system, there is no price incentive for a producer to improve the quality of his milk once he has met the legal bacterial requirements.

Some farmers who are aware of the need for a pricing system which accounts for variations in the quality of milk have objected to the use of premiums and discounts based on the bacteria count. Their objection is based on the proposition that farmers would have no practical way of checking the accuracy of the counts as determined by the distributor, hence the distributor could use such a system, if he were so inclined, as a means to reduce the price of milk. The following pricing system was developed specifically to meet this objection.

For purposes of illustration, the following four groups of milk based on bacteria count will be used.

TABLE I

Group	Bacteria Count
A	Under 10,000
B	11,000 to 50,000
C	51,000 to 100,000
D	101,000 to 200,000

Milk with a bacteria count of more than 200,000 cannot legally be used for pasteurized market milk in this state, and, for that reason, such milk will not be considered in this pricing system.

Now, suppose that a milk distributor wishes to pay a premium of 10

* Contribution from Montana State College, Agricultural Experiment Station. Paper No. 248 Journal Series.

cents per pound fat for milk to each group above Group D. Past experience indicates that if he establishes a fixed price for each group, some farmers will suspect the distributor of manipulating the bacteria count so as to reduce the over-all price paid to producers. In this proposed pricing system, the average price is determined first. In areas where the milk control board has authority, the price established by that board may be used to determine the total expenditure for milk which a distributor should make. Once the total expenditure is determined, the price for milk in Group D may be determined simply by calculating the total cost for the premiums, subtracting this sum from the total expenditure, and dividing the remainder by the total pounds of fat delivered. In this case, 10 cents per pound fat would be added to the Group D price to get the Group C price, 20 cents is added to get the Group B price, and 30 cents is added to get the Group A price. For example, if a distributor receives milk suitable for fluid use containing 1,000 pounds of fat in a particular month and the average price is to be \$1.25 per pound fat, his total expenditure for milk that month would be \$1,250. To determine the price for Group D milk, the total cost of the premiums is subtracted from the total expenditures for milk and the result is divided by the total pounds of butterfat received. In this case, \$145 (the total cost of premiums) is subtracted from \$1,250 (the total expenditure for milk), giving a balance of \$1,105. This balance is now divided by 1,000 (pounds of fat received) to give a price of \$1.105 per pound fat for Group D milk. The price for each group of milk is determined by adding the premium for that group to \$1.105. This series of calculations is presented in Table II.

TABLE II

Milk group	Pounds of B fat	Premium	Premium cost	Final price	Cost
A	150	\$.30	\$ 45.00	\$1.405	\$ 210.75
B	300	.20	60.00	1.305	391.50
C	400	.10	40.00	1.205	482.00
D	150	.00	0.00	1.105	165.75
Total	1,000		\$145.00		\$1,250.00

This system is designed to control the average price paid for milk. It should encourage production of low bacteria count milk and remove any incentive for a milk distributor to manipulate the bacteria count, since he could not increase his profits by so doing.

One additional feature of this system should be noted. The actual price for milk of any group will vary from month to month even though the average price and the premiums remain the same. The proportion of milk delivered in each group determines the price for milk in Group D. Com-

paring this system with the present one, it can be said that relatively high premiums are paid for low bacteria count milk during times of the year when such milk is difficult to produce, and that relatively large discounts are made for high bacteria count milk during times of the year when it is relatively easy to produce clean milk.

The following table is an illustration of price determination in a month when most of the milk is in the lower group.

TABLE III

Milk group	Pounds of fat	Premium	Premium cost	Final price	Cost
A	50	\$.30	\$15.00	\$1.485	\$ 74.25
B	100	.20	20.00	1.385	138.50
C	300	.10	30.00	1.285	385.50
D	550	.00	0.00	1.185	651.75
Total	1,000		\$65.00		\$1,250.00

The only difference between this illustration and the first one is a change in the *proportion* of milk in each group. The average price for milk and the quantity of fat are the same as in the original example, yet the price per pound fat for Group D milk is eight cents higher in this illustration, due to the small proportion of milk in the upper groups.

The following table again uses the average price of \$1.25 per pound fat and 1,000 pounds of fat, but this time the proportion of milk in the upper groups is greatly increased.

TABLE IV

Milk group	Pounds of fat	Premium	Premium cost	Final price	Cost
A	300	\$.30	\$ 90.00	\$1.345	\$ 403.50
B	500	.20	100.00	1.245	622.50
C	150	.10	15.00	1.145	171.75
D	50	.00	0.00	1.045	52.25
Total	1,000		\$205.00		\$1,250.00

The basic idea of determining the average price to be paid for market milk before determining the price for milk in each bacterial group may be used in conjunction with any of the present pricing systems. Payment on a straight fat basis has been used for illustrative purposes because of the simplicity of this method for milk purchasing.

A question may be raised as to the necessity of inducing farmers to produce milk with a lower bacteria count. Since it is not uncommon to hear consumers complain of receiving milk which is sour when purchased in many parts of the sparsely populated West, this author has assumed that there is still room for improvement in the quality of milk produced.

Another question may be raised regarding the additional cost of pro-

cessing a low bacteria count milk. This cost may be considered to be negligible since all licensed dairies are required to have the equipment necessary for production of low count milk. Proper equipment alone is not enough to ensure a high quality of milk. Alertness on the part of the producer in the care and use of this equipment is the essential element for the production of high quality milk. A proper pricing system should play a strategic role in developing the needed alertness.

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REPORT OF STEERING COMMITTEE WORLD LAND TENURE CONFERENCE

A SIX-WEEKS Conference on World Land Tenure Problems was held at the University of Wisconsin between October 8 and November 17, 1951. The conference participants included approximately 80 foreign delegates and trainees from nearly 40 nations. Sponsors of the conference were the Technical Cooperation Administration of the U. S. Department of State, the Economic Cooperation Administration, the U. S. Department of Agriculture, and the University of Wisconsin.

The conference produced over 60 major papers and addresses dealing with various aspects of land tenure problems throughout the world. In addition, special "working parties" prepared reports on 24 different technical issues and problem areas that must be considered in any effort to improve land tenure systems around the globe. It is anticipated that these papers and reports will be published in the near future.

One of the major documents produced by the conference was the report of the Steering Committee. A portion of this report is reproduced below.

REPORT OF THE STEERING COMMITTEE

General

The major contribution of this conference is the realization that land tenure is a world problem and an extremely urgent one at that. If social justice is to be the foundation of democracy, land tenure needs the attention of the free world.

The excellent work of agencies of the United Nations in the field of land tenure and land reform is not unfamiliar to the conference. The report of the Economic and Social Council of the UN on land reform, dated September 21, 1951, for example, sets forth recommendations which most of the delegates have read and with which they are in general agreement. But we believe that the kind of conference we have had can prepare the way for the actual carrying out of such recommendations and has prepared the soil for greater international cooperation on land tenure

problems. Here at the University of Wisconsin we have had an opportunity freely and openly to discuss our mutual problems, unhampered by national responsibilities, speaking always for ourselves alone, not for our governments. Further, this conference brought together a happy blend of administrative and academic people. The administrators brought hard, immediate, practical problems; the university people, research results and broad perspectives. In short, the conception of this conference was sound and its pattern must not be abandoned.

The committee used the dual criteria of economic efficiency and social justice, and discovered that there was hardly any part of the world where the prevailing tenurial pattern satisfied these in a full measure. It also became convinced that there could not be efficiency without justice and there could be no justice without efficiency.

We found that unhealthy features in land tenure are due either to basic backwardness of an economy or to institutional maladjustments, social, economic, and political. We realized that the land tenure problems had roots spread through the entire economy and the remedies had, therefore, to be sought both within and without agriculture. The problems of pressure and control of population, industrialization, distribution of wealth and income, and tax and inheritance laws were as germane to our discussion as those of land reclamation, land consolidation, and landlord-tenant relations. We realized that the land tenure specialist may go wrong if he ignores the integral relation between agriculture, the rest of the economy and, indeed, the social order. We also realized the prime importance of education and communication in a land tenure program. Creating an ideal economic farming unit and putting it in the hands of an illiterate farmer bound to the old ways of agriculture by superstition and custom does little to solve the basic problem.

Comment on Some Major Problems Discussed at the Conference

Maldistribution of Land Ownership:

One feature of the land tenure problem which appears to be fairly ubiquitous is the concentration of ownership of land in a few hands. Whether the land is scarce or abundant, somehow it has become concentrated in the hands of a comparatively small class of large landholders, many of whom take little interest in cultivation. We have thus a queer phenomenon of a few large—and often badly managed—farms existing side by side with a very large number of small and uneconomic farms in many countries of the world. Purchase and redistribution of land either by sale, lease, or otherwise, has been a major plank of agrarian reform throughout its history. After World War II this program has received a fresh impetus. Land reform in Japan is an outstanding example of this.

Similar measures are contemplated in India, Pakistan, and Formosa.

For a proper appreciation of these reform measures, it is necessary to emphasize that ownership rights in many countries, especially in the Orient, are of a dubious origin and legally and morally not well established. This, along with the exigencies of economic and political situations, determines the manner and extent of compensation given to the dispossessed owners. What distinguishes the democratic from the totalitarian approach to the question is whether or not the reform is sought to be accomplished by due process of law and is subject to judicial review. If the legislation authorizing purchase has been passed by a democratically constituted legislature and respects the person and individuality of the divested parties, the extent of compensation, though of course vital, becomes less crucial.

For the country which wishes to embark on a land purchase and redistribution program, there is much experience in various parts of the world on which to draw. There is experience in bond flotation and the financing arrangements, both in countries with and without security markets. There is also important experience in flexibly defining economic farming units under varying conditions of soil, climate, and market. Laws fixing limits on maximum size of holdings exist in several countries. Progressive taxation as a means of forcing neglected land or land owned by absentee landlords into the market exists as do arrangements to prevent excessive fragmentation of the redistributed land. There are also possible alternatives to land purchase and resale schemes which may, under some circumstances, free capital to be used for other important purposes.

Small and fragmented holdings constitute a major obstacle to efficient farming. And yet it is a universal phenomenon in all over-populated countries. Strangely, however, it is also found in countries with a favorable man-land ratio. Whereas in the former, it is a symbol of over-population and under-development, in the latter it is an offshoot of faulty social and political arrangement and institutions.

A satisfactory solution of the problem has to contend with established law as well as custom and tradition such as those affecting inheritance laws, property rights, distribution of wealth and income. On the technical side, there is enough experience with land consolidation efforts and achievements in various parts of the world so that, if properly assimilated and articulated, it could be used to advantage with situational modifications. Once consolidation has been achieved, active training programs for the farmers as well as arrangements to prevent refragmentation, through the operation of inheritance laws, are required. Also required is a speeding up of consolidation work through the use of aerial photographs, streamlined procedures, speedier surveying and the like.

The problem, however, assumes altogether different dimensions where, even after consolidation, the size of the individual unit remains too small and uneconomic. If there are limitations on the removal of surplus farm population to non-farm occupations, solutions will have to be found within agriculture, at any rate for the short period. Cooperative farming is suggested as one possible remedy, with a varying degree of integration with local conditions. Though this does not "solve" the problem of full efficient use of resources, it does mitigate it to some extent.

Credit:

If an enterprise has an efficient and an economic unit of operation, the problem of credit is not particularly difficult. It is only when the borrower is considered "uncredit-worthy" by the normal financing agencies that a question of special and alternative arrangements springs up. Unfortunately, in many parts of the world, a large number of farmers are outside the pale of organized credit. This is especially true when substantial credit is needed to purchase land or capital equipment. Mere transfer of ownership rights from one class to another might not result in improved use of land, unless means are available to the new owners to increase their productive efficiency. The very process of agrarian reforms, such as the acquisition of new rights, etc., will set up pressure for additional funds, while their supply, on the other hand, is likely to contract to some extent by the enforcement of measures like restrictions on transfer and subletting of land, etc. The provision of suitable credit, therefore, assumes great importance in a plan for achieving any improved pattern of tenurial and land-use relationship. There are two types of institutional agencies which could be organized to meet the situation—cooperative and/or state-sponsored corporations. In some countries, the risks of financing the severely disadvantaged class of cultivators is so great that, without the active support of the state, cooperatives might find it difficult to finance them. In a democratic state, the objectives of government policy and of the cooperatives run parallel to a great extent. To the extent they do, there is no reason why each should not draw upon the other to achieve the common end.

Government-to-government loans from developed countries to underdeveloped countries are needed to start the flow of credit from state agencies to cooperatives (and other local lending institutions) and thence to the farmer. A state-sponsored corporation may thus, in certain circumstances, act as a central reservoir of loanable funds on which the cooperatives could draw in times of need.

There should, however, be proper safeguards for insuring that the credit supplied is used for the purpose for which it is given, viz., the land improvement. The provision of loans, therefore, internal as well as inter-

national, should be conditioned on the development of a well-organized mechanism for supervision and check at every stage of the application of funds, so that the credit given may be at once both safe as well as productive. The organization of a full-fledged extension service side by side with the provision of credit under the authority of a Farm and Home Administration would be a step in the right direction.

It may be not only futile but a total waste to give credit to the uncredit-worthy farmer without providing him with technical supervisors and assistance until he becomes qualified to carry on his home making and farming operations in a sound and rational manner. This will involve attention to tenure, technology, and provision of social services like health, and education.

Equitable Landlord-Tenant Relations:

As already indicated, one of the most serious issues raised at the conference is the concentration of landownership in many under-developed countries. This has invariably given rise to systems of tenancy that have proven ruinous to farm workers and have brought about depressed conditions in agriculture. It has been emphasized that the ultimate goal in land tenure improvement is to secure the ownership of land for the tillers of the soil. While this has been accepted on broad principles as the ideal tenure system in free societies, farm tenancy has always a justifiable place in any system of progressive agriculture. A rational program of improving landlord-tenant relations is therefore necessary to raise the efficiency of farming, afford security and to secure fair contractual arrangements to safeguard interests of tenants and land owners. Especially is this important, and the need very great, where tenants are in the category of share croppers such as those found in many countries of Asia, Latin America, the Middle East, and the USA. As a group, they are generally ignorant, without much capital, hopelessly bound to the land because of debt and, as a consequence, exploited, oppressed, and in dire poverty. Tenancy legislation is only one of the lines of improvement indicated. Education, health protection, social security, and provision of cheap and easy credit are other lines.

Experience in many countries in finding equitable landlord-tenant relations may be profitably utilized in undertaking programs of improvement of the tenant's status.

Possibilities of Cooperation in Land Tenure Improvement:

Cooperation is one of the issues raised in the search for improvement of tenure conditions in many countries. It would seem that where peasant farming has degenerated through fragmentation into small uneconomic farm units on account of high pressure of population on land leading to

conditions like extortionate rents, low education and low literacy, high birth and death rates, poverty, disease and debt, cooperative farming appears, *prima facie*, an attractive solution. But as experience has proved its limited success, in the absence of high character personnel leadership, it may, in countries under those conditions, be tried out on a pilot basis, and gradually extended if success warrants such extension.

Land Reclamation and Settlement:

In many countries strong efforts have been made since World War II to alleviate maladjustments in agriculture by reclaiming land and settling farmers on it. Programs in Venezuela, Chile, Egypt, Syria, Holland, Italy, and other countries are in point. Perhaps most dramatic and inspiring of all has been the program in Finland. Such projects not only permit experimentation with technological innovations, like mapping by aerial photography and mechanized land clearance methods to make land more speedily available for settlement, but also with land tenure and credit arrangements to prevent fragmentation, induce good husbandry and permit land ownership without unduly burdensome debt.

[EDITOR'S NOTE: The remainder of the report involves a number of detailed recommendations for continuing the work started at the conference.]

THE STEERING COMMITTEE OF THE WORLD LAND TENURE CONFERENCE

AKRAM EL-RICABY, Syria, *Chairman*
JOSE E. VELMONTE, Philippines
ALBERT COSTA, France
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BOOK REVIEWS

Economics of Income and Consumption, Helen G. Canoyer and Roland S. Vaile. New York: The Ronald Press Company, 1951. Pp. xvii, 355, \$4.50.

This book has been written for students who have had a course in principles of economics and wish to obtain further understanding and clarity of the economy from the point of view of consumers. This book also is well adapted for a beginning course in economics for those students who for one reason or another do not take the formal principles course. It is written in simple but excellent choice of language with innumerable realistic examples to create and maintain the interest of the reader. Graduate students, research workers, and others with a bent toward the economics of consumption will find this book to be a valuable reference because it reflects the many years of rich experience of the authors.

The first chapter is devoted to briefly indicating the important features of the political economy in which goods and services are produced. The authors point out that natural resources and capital are combined in varying degrees by people but institutions may facilitate and restrict the production of goods and services to satisfy desires.

Several of the next chapters set the stage for the presentation of the socio-economic aspects of consumption *per se*. These early chapters deal with how the economy produces, specialization in production, and exchange and marketing. Also, one early chapter is devoted to defining production, consumption, and income and another to a brief but concise statement of standards and planes of consumption.

The remaining two-thirds of the book deals directly with consumption. Consideration is given to the general problems of consumption, national consumption and then to the more specific—personal consumption. The chapters dealing with factors affecting consumption and personal characteristics affecting individual consumption are exceptionally well developed. The reader is constantly reminded that our capacity to produce and high incomes, while extremely important in determining patterns of consumption, are not the only factors that need to be considered. The authors point out that consumers behave as human beings and not as integrated machines. Consumers have their emotional as well as rational buying habits.

A strong feature of the book is that the authors present and analyze the facts within the socio-economic framework but impose no particular philosophy. For instance, they show that advertising is an effective selling device helpful to many consumers but in other cases it may mean inefficient use of resources. Also in the final chapter the authors point out

that government participation in economic affairs may aid consumers significantly in some instances and work contrary to their welfare in others.

The headings in every chapter go a long way in explaining what the reader can expect, the tables are easy to understand, and the charts are of assistance in comprehending significant points. This book should have particularly wide acceptance as a text for beginning students in economics.

GERALD E. KORZAN

Oregon State College

Farm Management Manual. Second Edition. V. B. Hart and S. W. Warren. Ithaca, N.Y.: Comstock Publishing Company, Inc., 1951. Pp. ii, 86, \$2.00.

The expressed purpose of the *Farm Management Manual* is to serve as "... a brief guide for use in considering some of the most important farm management problems of the times." Use of the Manual is suggested for "... agricultural and homemaking teachers and extension workers and students who may be called upon to answer or discuss ... questions on the organization and management of farm businesses." To accomplish this purpose, the authors set up the following discussions: trends in farming and prices, factors influencing farming profits, and selected problems in the farm business such as records and accounts, analyzing the farm business, getting started in farming, father-and-son business agreements, and business practices for farmers.

The authors are to be complimented for selecting important problem areas and presenting their information in such a condensed and readable form. The section showing trends in farming in the town of Dryden, Tompkin County, New York over the period 1907-1947 is especially interesting and informative. It is the opinion of this reviewer that surveys of existing farming practices serve their most useful purpose in showing, in aggregate, the trends that are taking place in an area and pointing up the adjustments that might be applicable to particular farm situations. In this section, however, as in most of the others, the authors have been content to describe the trends without giving much analysis of the reasons for these changes.

Much of the remainder of the Manual is devoted to discussions, tables, and graphs that lead to a large number of general rules which are proposed by the authors as guides in farm management. Examples of these general suggestions found throughout the Manual are, "There is plenty of evidence to show that good yields are profitable, but extremely high yields are usually obtained at a high cost," and "When considerable untillable land is available, the enterprises should be so chosen as to provide a use for this land, such as by grazing livestock on it."

Selecting two statements from their context works an injustice to the information. The authors discuss these suggestions in more detail but again in general terms including such terms as "usually" and "in many cases." Such generalities may have some use, but they have major weaknesses. These rules give no specific answer to problems of management, they may not be relevant to the particular situation, and they may not be consistent. Most farmers know that high yield may be expensive. The management problem is to determine how far it is profitable and feasible to increase yields by alternative methods and then to make a choice. Utilization of certain land areas is a doubtful goal of farm organization. Most farm operators are interested in maximizing some return from the alternative combination of land and other resources used in production, regardless of the utilization of certain areas.

In the section on prices, the authors have listed 10 suggested management practices to be taken "when prices are high or rising" and another group of 10 steps for periods "when the price level is falling." Many of these rules are good management procedures that apply regardless of the direction of price change. Again the problem is one of determining the extent of application under various circumstances. The farm is compared to a ship whose captain spends all of his time preparing for the storm in good weather and weathering the storm in bad weather. The objective of getting somewhere is not recognized in the 20 suggestions. One might ask why the captain ever set sail. A more helpful approach might be to suggest that upward or downward price movement are phases of the same general problem facing the farmer-captain; that predicted prices for a relevant time period are necessary parameters to the economic allocation of resources, and that prices are but one part of the necessary information in the successful choice between alternative action in achieving some objective.

Failure to emphasize economic theory in farm management leads to an inadequate treatment of farm business analysis. The suggested analysis is to determine "what was done" and "who did it." Each farmer can then compare his accomplishments with standards presented for each decile of business farmers in New York. It is implied that the farmer could and should realize higher levels of accomplishment. This implication may well be inconsistent with other generalizations scattered throughout the text.

How successful is the Manual in achieving its purpose? The reviewer believes that the generalities have such major weaknesses that they cannot be used to give guidance on farm management problems on individual farms. Anyone called upon to discuss organization and management of farm businesses will require more useful tools. More precision into the decision making process in farming can be supplied by the application of economic principles. The Manual may be useful in suggesting types of

adjustment to those who are qualified in economic analysis. It would be a dangerous handbook for those without this training.

IRVING F. FELLOWS

University of Connecticut

Financing Defense, Albert G. Hart and E. Cary Brown. New York: Twentieth Century Fund, 1951. Pp. ix, 161, \$2.00.

This book is the second in a series of Twentieth Century Fund reports dealing with problems of financing the mobilization program while at the same time trying to protect and maintain the civilian economy.

The first report, entitled "*Defense Without Inflation*," published in April, 1951, gave main attention to general policies for dealing with the economic strains arising from the defense mobilization effort. This volume concentrates on "budget measures" to finance the defense program. It indicates various ways in which federal revenues can be increased to meet the necessary costs of mobilization without too serious damage to the American economy.

The book starts out by discussing the elements of the budget problem in a "readiness economy." A "readiness economy" for which we must plan in the next few years differs sharply from a war economy in several particulars: It has to operate without the special patriotic incentives to work hard, curtail consumption and accept regimentation that help effectuate economic policy in a war economy. In a "readiness economy," we cannot work on the assumption that we will be out of trouble in a few years. There are also other differences that must be reckoned with.

In discussing the budget in a "readiness economy," the authors point out that if the government is handing out spending power through its outlays much faster than it is absorbing spending power through its tax revenues, a large inflationary gap will remain. To reduce this gap to manageable proportions, calls for some combination of reduced government outlays and increased revenues. This book says there is no way to calculate precisely how much expenditures must be cut and taxes raised to enable us to make our mobilization adjustments without serious inflation. As a benchmark for budget policy, a workable standard is perhaps to look for equality between Treasury cash operating income and outgo.

In the second chapter, the authors examine the prospects of total federal expenditures, the timing of the outgo and the high proportion of outgo that is caused by defense. They give consideration to prospects of easing inflation by economies both in defense and non-defense items. They come up with the conclusion that the problem of inflation, caused by increased government military outlays, cannot be solved by a reduction in non-essential civilian outlays. Most of the suggested economies are of a type that will not take hold immediately in reducing inflationary pressure, and

military outlays can be expected to increase by leaps and bounds. While economies are very desirable, under the present mobilization picture, inflation can be controlled *only* by increased taxes. This harsh fact is one that must be faced by the American people and the Congress.

Recognizing that federal expenditures are the fountainhead of inflationary demand, a large part of the book necessarily deals with tax policy to offset the inflationary effects of these government outlays. Subsidies and tariffs are given a brief but interesting treatment in Chapter 3, and the next four chapters give rather detailed discussion of commodity taxes, personal taxes of all kinds, the personal income tax, and taxes on profits.

Possibilities and limitations of various tax policies and their influence on inflation control are explored. Since commodity taxes are usually added to the price of the article taxed, it is generally concluded that fighting inflation with such taxes is, in the words of the authors, "like fighting a forest fire with a backfire. If the backfire works, it stops the forest fire by burning up part of its fuel before the main fire can reach it. But if the backfire is not well handled, it may burn sections of the forest that could have been saved."

The authors point out that the personal income tax is one of the strongest weapons in the fight against inflation. Coming directly out of individual incomes this tax can remove excess spending power from the market in the most direct way. This tax has a broad base and if a still broader base is needed, lowering of exemptions is a better way of uncovering more tax potential than is the general sales tax, and far superior to any other tax suggested. Tightening up of enforcement can also locate additional income.

The limitation of profits plays an important part in economic stabilization. Profit incentives also play an important part in economic mobilization. Just how to obtain the proper balance between these conflicting objectives is a difficult problem. The authors explore the workings and effects of profits' taxes in a very able manner, finally pointing out that excess-profits taxes probably have greater disincentives for mobilization than do income taxes yielding equal revenue.

How to adapt the budget to uncertainty is a basic problem that is discussed. The authors believe that the nation cannot afford to let uncertainty paralyze budget policy. In the next year or so, we must make a determined effort at economy, and have adequate taxation, backed by restrictive monetary policy if we are to control inflation.

Following the pattern of the first volume in this series of reports, the last chapter contains a report prepared by a committee consisting of J. M. Clark, Chairman, T. W. Schultz, A. Smithies, and D. H. Wallace. This committee report re-emphasizes many of the same points made elsewhere in the book by Hart and Brown.

Key points emphasized are:

1. There are much heavier inflationary pressures ahead.
2. Increased taxation, widely based so as to restrict consumer spending, is still the pivotal feature of an anti-inflationary program.
3. Close scrutiny of all outgo is essential; the hardest problem is to introduce methods that will reduce outlays without injuring essential services.
4. Equity in sharing of burdens during the mobilization period depends on preventing further inflation.
5. The aim should be to keep the economy as free as possible.
6. Unconventional taxes should be explored.
7. Civilian programs should be re-examined with a view to curbing expenditures where possible.
8. Maximum defense value should be secured out of defense expenditures.
9. A more serviceable time-table of expected government expenditures is needed.
10. The burdens of defense cannot be conjured away. The inflationary method of bearing them is more burdensome than the method of higher taxes now.
11. A concluding statement says, that if the fiscal program actually adopted proves to be more than is needed, it can be reduced far more quickly and easily than an adequate program could be increased.

As in the previous volume, the authors have re-advocated the customary inflation control measures which have been emphasized over and over. As is always the case, the big problem is to get them adopted and put into effect. In view of present taxes, will Congress and the people go along with additional tax burdens? Most of us know what needs to be done to control inflation but how do we put it over? Some say this is not the job of the economist, but the job will not be done unless more aggressive action is taken.

This book gives a good treatment of how to control inflation through taxation policy and budgetary measures. It is written in a style that most laymen can readily understand. It is to be hoped that the future volumes in this series will explain not only what the problems are, but go further in discussing how policies for controlling inflation might be implemented.

G. ALVIN CARPENTER

Utah State Agricultural College

Interregional Competition in Agriculture, Ronald L. Mighell and John D. Black. Cambridge: Harvard University Press, 1951. Pp. xii, 314, \$5.00.

This book is the result of a study covering a 10-year span from 1936 to

1946. The quantitative research upon which it is based is confined to dairy products of the New England and Lake States, which in the main compete for the New England markets.

The first five chapters are devoted to a discussion of the assignment, the general theory of interregional competition, the various specific analytical methods available, and a general description of the dairy industry in the United States and in the Lake States and New England. Chapter 2 has a brief but excellent discussion of specialization, comparative advantage, and location theory. The comparative advantage ratios are somewhat oversimplified for advanced students since such examples leave unspecified how the gain from trade will be distributed between two regions and shows only that some "free" trade is better than no trade at all. Chapter 3 contains an excellent summary of the limitations of the comparative-cost approach to interregional competition and an equally fine exposition of the supply and demand response approach. This reviewer did some of the budgeting for the Southeastern Minnesota area and adjustments in the composite supply schedules for such external factors as fires, weather, etc. are extremely difficult, yet these must be quantified if predictions are to be made. While the authors say "it is necessary to estimate the normal effects of all factors of this type and make the appropriate adjustment in the composite supply schedule," one wonders whether this can be adequately done with our present state of knowledge.

Chapter 6 presents a clear, detailed picture of the analytical procedure used in the study including the price assumptions upon which the budgets are based, the time period allowed for price and technological changes to work themselves out, and selection of farms to be budgeted. This chapter also includes a discussion of the choice of the particular budget for each farm which is most likely to be followed. Whether the individual doing the budgeting has a sound basis for choosing between the "most profitable" and "most probable" alternative, and whether this will be sufficiently accurate for prediction purposes is problematical.

Chapters 7 and 8 deal with production analysis in New England and the Lake States. Budgets on the sample farms were completed in 1936 assuming prices in the Lake States 20 per cent above and below "normal" and in the New England States 15 per cent above or below "normal." All other prices are assumed constant so that the 20 and 15 per cent represent relative changes. The method of determining relative price, and, in New England, income changes, by the use of "modal-type" farms will raise questions in the minds of some readers. In the Lake States indexes of prices of selected competing products and of dairy feed grains bought were used in determining relative changes in milk prices. In determining relative changes, the number of competing products and the appropriate

cost items which should be included in the index creates some problems in methodology, assuming these decisions are made at the time the study is initiated.

In New England the projected increase or decrease in output based upon the sample farms continuously in operation, and using relative price changes as the measuring stick, resulted in departures from the actual ranging from -8 to $+47$ per cent. Using income as the measure of the relative profitability of dairying in the two periods resulted in estimates departing from the actual by -19 to $+39$ per cent. In the Lake States, on the basis of price ratios, the actual change on the sample farms ranged from a -6 to $+29$ per cent when compared with the projected estimates. Some may disagree with the statement that "the samples taken in these five counties apparently represent their counties very well indeed and the counties their states equally well." A regression which indicates the relationship between the actual and the estimates for individual farms in the sample would be helpful in this instance.

Chapter 10 is devoted to "Summary and Outlook" with combined supply curves for New England, the Lake States, and a Supply-Demand Equilibrium indicated. The chapter contains an excellent presentation of the actual mechanics of distributing production, shown by the general Supply-Demand Equilibrium, between regions and areas. The validity of the actual results of the study are passed upon by the authors and the long-run outlook assessed.

Chapter 12, entitled "Public Policy Aspects," outlines a research program which would be of value in indicating desirable production adjustments. Many agricultural economists will be surprised to find the authors outlining a project which includes delineation of type-of-farming areas, classification of farms in sub-areas, and defining "modal-type farms" in each sub-area. Assuming farms can be classified, the value of such an approach rests largely upon whether a single sample of dairy farms can be drawn which adequately represents the many components of a farm of this type. Some will doubt that our sampling techniques are sufficiently advanced to permit this.

The book seems to put more stress upon the reliability of the actual results for prediction purposes than seems warranted. Since the composite supply schedules of the sample for the Lake States closely approximate the actual changes in the counties in which the samples are drawn, the authors conclude "that sampling for case-type analysis can be done, at least in a territory no more varied than that of the Lake States with a high degree of success." There is some doubt in this reviewer's mind that a discrepancy between actual and estimated production ranging from -6 to $+29$ per cent is a sufficiently reliable sample from which to draw conclusions. The authors are satisfied in the case of the Connecticut Valley

farms that "it is highly significant under the circumstances that the actual changes were even in the same direction as forecasted."

It is difficult to adjust the final supply curves for new firms entering the industry or the exodus of firms from the industry. Except for the Cabot-Marshfield area the supply curves are based upon samples of dairy farms in operation continuously from 1936 to 1946. The resulting discrepancies in the estimates and actual production may stem from shifts in the number of firms. Such shifts must be accounted for in any complete analysis of location of production.

One final problem in the determination of supply schedules for each of several areas by any of the methodological methods available, centers around the prediction of technological change. If technological changes over the 10-year span had been predicted in each area when the project was undertaken in 1936 it may have yielded significant results. This is a field which has been given all too little attention by economists.

The value of this book, however, does not rest upon the closeness of the predictions and estimates. The methodological approach used in this study offers certain advantages in the analysis of interregional competition which should be given serious consideration. The book presents the details and method of approach to a general equilibrium solution of interregional competition. The outlines of the general theory and the important considerations for those interested in this field are ably presented.

Finally, the book deals with a field of economics which has had too little attention except in general theoretical terms. One hopes it is studied by many.

STANLEY K. SEAVER

University of Connecticut

Agricultural Marketing, Frederick Lundy Thomsen. New York: McGraw-Hill Book Company, Inc., 1951. Pp. x, 483, \$6.00.

Early in 1948 a subcommittee of the Land-Grant College-USDA Committee on Training for Government Service met in Washington to discuss training marketing personnel. F. L. Thomsen served as one of the advisors to this subcommittee and, along with other contributions, was instrumental in outlining the broad scope of an introductory course in agricultural marketing. His present text in this field appears to provide a reasonable coverage of the major areas suggested by the subcommittee outline. In addition, the book includes two major sections on improvements in marketing—an area strangely unemphasized in the subcommittee report.

The general coverage is suggested by the titles to the major parts of the book: I. The Marketing Job; II. The Marketing System; III. Prices and Margins; IV. Auxiliary Services in Marketing; V. Potential Improvements in Marketing; and VI. Means of Effecting Improvement. The author notes the advantages and limitations to the functional, commodity,

and institutional approaches to marketing and states his policy of using "... a combination of approaches which is likely to give the best understanding of the marketing system, its principal problems, and indicated solutions, regardless of academic categories or pigeonholes." These problems of scope, approach, and emphasis have long troubled marketing instructors and textbook writers, and it is certain that no single solution would be perfectly acceptable to all. With certain minor reservations, however, the present reviewer believes that the author has accomplished his objective. The scope seems sufficiently broad and the approach logical and well balanced. Although necessarily thin in some spots, it should prove satisfactory and interesting for most teachers and students. The use of this text should permit some reduction in the use of outside readings—a virtue not unimportant in an elementary text, yet largely missing in those that have been available.

In his preface Dr. Thomsen states: "There is a tremendous temptation for the author to address himself to his colleagues rather than to his student readers and to display his fancied professional erudition rather than his limited pedagogical abilities. I have tried to avoid overemphasis of my own particular interests and pet theories about marketing." Such a policy seems advisable, but its implementation in one particular area seems unfortunate. There is almost a minimum application of economic theory to marketing problems in this text in spite of the fact that the prospective students are presumed to have had some exposure to "principles." What theory is presented has been so simplified, presumably to avoid the appearance of professional competence, that the results must be quite confusing even to the most capable student. The sections on elasticity and profit maximization in Chapters 8 and 9 are good examples, and the confusion is compounded when these inadequate treatments are carried into the discussion of price discrimination in Chapter 17.

Fortunately, the author did not always succeed in directing his remarks to the student or in avoiding pet theories. Some of the more enjoyable sections derive from his well-known ability to view work in this field with a jaundiced eye. The real significance of these occasional sections will be missed by most elementary students but they will be appreciated and enjoyed by the instructors and professional readers.

This is not the perfect text in marketing, but it appears to be one of the best available and a real contribution to instruction at the elementary level. In the opinion of the reviewer, the need is even more critical in the advanced field. It can be hoped that Dr. Thomsen will soon turn his attention to this area where pedagogical ability is less important, perhaps, than professional erudition.

RAY BRESSLER

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Economics of American Agriculture, Walter W. Wilcox and Willard W. Cochrane. New York: Prentice-Hall, Inc., 1951. Pp. xiii, 594, \$5.50.

This book is likely to become popular for a number of reasons, among them the following: (1) it is well integrated, (2) it covers the "field" of agricultural economics, (3) the statistical information is current and, (4) issues are set out in bold relief. These are important attributes of a good textbook. It appears to be best adapted to serve as a basis for a survey course in agricultural economics following the general course in principles.

Wilcox and Cochrane begin with principles of resource allocation and production problems for the individual firm. This is followed by a discussion of institutional aspects of land as a factor of production under the general heading of problems in acquiring and managing land. A thorough description of the marketing system then serves as an introduction to an analysis of farm prices, the section on price analysis being one of the strongest in the book. After the analysis of markets and farm prices, the authors introduce the student to the relationship of the farmer to other sectors of the domestic economy and to world markets. The concluding chapters on agricultural policy depict the growth of government in agriculture and the evolution of the more important programs in the field of agricultural policy.

Early in the book it becomes apparent that the authors are more concerned about raising issues than they are about providing answers in neat packages. They point out that it may be necessary to assign outside readings both in theory and in statistical supplements to round out any particular discussion. Due to the broad scope of the work this need will arise frequently.

The effect of this approach is that the alert student will find himself out on a limb grasping for answers which are not readily available. For example, in an apparently innocent discussion of how types of farming become established, the point is made that farm output has expanded faster than population growth since the stabilization of cropland acreage in 1920. This is followed by the bald statement that production specialists expect this situation to continue indefinitely into the future (p. 26). Many, of course, will not accept this conclusion.

A similar result is produced in a chapter on farm tenancy problems. The statement is made that "it is only when demand gets badly out of adjustment with the supply that changes are made in prevailing rental shares" (p. 147). This produces the conclusion that "if one views rental rates as the competitive price for the use of these resources, he will avoid the futility of trying to determine 'fair rates' in an ever changing market" (p. 148). This is indeed a shallow burial for an obstreperous issue, much too shallow for the comfort of this reviewer.

Part III, "Marketing farm products in an interdependent economy" is

a description of marketing channels and commodity problems. Its contents, with the exception of one chapter, are determined largely by the question, "Does distribution cost too much?" The exception is a misplaced chapter on consumer demand in relation to income distribution patterns. This discussion belongs in Part IV which is a lucid construction of farm prices and an equally clear portrayal of the role prices play in guiding allocation of resources of the agricultural firm. The authors then take a broad look at what lies ahead as far as food production and population trends are concerned. They predict food and fibre shortages if war comes; surpluses if peace is restored. This section (Section V) raises the broader issues which prompt any serious study of the economics of American agriculture.

Finally the last section, Part VI, "What government aids do farmers need?" does not answer the question raised. Instead it contains a survey of the views of the various schools of thought on the subject and concludes with a plea for a reorientation of our thinking. The "new look" is necessary because "we are faced with the prospect of food and fibre shortages in the United States and in the world of its allies for an indefinite period." (p. 582) The optimism of the concluding sentence on page 26, referred to above, is thus gone and the reader is left to steer his course with a series of penetrating questions arising from the realization that the economics of American agriculture will be increasingly affected by world-wide conflicts.

The approach of this book will be stimulating to most readers. With few exceptions the work is penetrating and complete. There seems little doubt, however, that its use will be limited to those colleges and universities which expose their students to a general course in principles before offering them a course in the economics of agriculture. In the opinion of this reviewer the authors selected their level of presentation wisely in that it permitted them to do an effective job.

BALDUR H. KRISTJANSON

North Dakota Agricultural College

Soil Survey Manual, Soil Survey Staff, Bureau of Plant Industry, Soils, and Agricultural Engineering, United States Department of Agriculture, 1951. Pp. vii, 503, Superintendent of Documents, \$3.00.

Without doubt the first sentence in this publication is the most misleading in the book: "The *Soil Survey Manual* is intended for use by soil scientists engaged in soil classification and mapping." It is unfortunate that others are thus discouraged from reading a discussion that reflects so broad an outlook on agriculture and agricultural research methods and so firm a grasp of how the quantitative and the qualitative, measurements and judgements, must be woven together in an evolving continuum for the attainment of complex understandings. The *Manual* is intended *pri-*

marily, of course, for soil scientists engaged in the classification and mapping of soils. As such it includes sections on the kinds and hardnesses of pencils to be taken to the field, details of map preparation, location and spacing of traverses, and the like. These sections are easily skipped, however, by the reader who wishes instead to gain insight into the science of handling complex physical bodies that are complexly related to man's interests; glimpse more clearly interrelationships among disciplines that overlap in the common name of agriculture; or merely gain a better acquaintance with what goes into a set of maps that can be very useful to a wide variety of agricultural specialists.

The *Manual* is the result of efforts by many men. It also is designed primarily as a reference book with reasonably complete discussions under many headings, some of which necessarily overlap. For these reasons, the reader who follows it from cover to cover finds some shifts in points of view, some variations in effectiveness of expression, and quite a bit of repetition. Over-all, however, the writers have done a good job of picturing soil classification and mapping as a dynamic human process that always must grow with the growth of knowledge and follow with wisdom and foresight the changing capabilities and interests of the men who use the soil. In most sections they have dealt skillfully with subtle problems of balancing such elements as short-run interests against long-run usefulness, the potentials of greater detail against the need for legibility and reasonable simplicity, and the importance of serving farmers against the value of serving other scientists who in their turn serve farmers. There are few aspects of the problems at hand that do not receive mention in some section. The problems of soil classification and mapping are interwoven with problems of soil management, the details of plant responses, the selection of experimental plots, and the appraisal of farms. Indeed, one is moved to wonder what superhuman individuals soil classifiers must be!

The dispassionate discussion of soil erosion is most refreshing in these days of intense conservational evangelism. The almost, if not complete, lack of references to the efforts of a sister organization within the same department is an interesting commentary, however, upon what has come to pass within the governmental structure we of this country have constructed for ourselves—a reflection, perhaps, of the techniques by which quasi-private enterprises are built and maintained within that government.

The idea that erosion in *some* places is unimportant, the suggestion that we cannot afford to stop *all* erosion everywhere, and the notion that *occasionally* erosion only exposes other soil layers nearly or fully as useful are points that in a saner background would appear commonplace. Today they border on the subversive, in the light of current propaganda, and therefore symbolize the high degree of sincerity and intellectual honesty maintained in the *Manual*.

With little doubt the weakest sections in the *Manual* are those that

deal with rural land classification, land appraisal, and land-use planning. The authors here fall prey to the common tendency among specialists to see the world only through the eyes of their specialty. They fail to recognize even that physical components other than soils—notably climate—can provide independent and very useful bases for classification. It is true of course that other aspects of land often are associated with soils, but the fact remains that frosts restrict fruit growing and some other undertakings far beyond restrictions evident on soil maps. The authors in these sections evidence a limited comprehension of the land market and a limited knowledge of the participants therein. They fail to grasp fully the uniqueness and reality of economic and social forces and dismiss a large part of current land classification work as “personal interpretations of undefined combinations of attributes.” They are eager to point out how some land classifications have misled, without recognizing that long lists of specific instances could be given where soil maps also have misled. At the same time, however, rural land classifiers can find worthwhile points in these sections, among the most important being an emphasis upon the hazards of running forward while looking back. A mention of “undue concentration on present land use, including the condition of farm buildings . . .” elsewhere in the text appears to be a pointed reference to one well known system of economic land classification and by repetition underlines criticism of the backward look. A partial failure to grasp the possibility of wisely using indicators in economic work in ways that parallel the use of soil characteristics with inferential value in soil mapping hardly invalidates criticisms made on this point. The fact that many of the weaker points made in the discussion of land classification are contradicted elsewhere in the *Manual* leave a land economist feeling much happier by the time he has read all of it.

Discussions that reveal the logical framework of the soil classification system, the somewhat subtle differences between categorical and cartographic units, reasons for emphasizing both genetic and morphological characteristics of soils, and the ways in which evolutionary steps have come in building the present system of soil classification and mapping are revealing and carry implications for research in other fields. Probably more important, however, to most land economists and farm management specialists is the factual background they can get from the *Manual* for the interpretations of soil maps necessary in many of their day to day activities. An understanding of soils and a knowledge of the specific soil resources of particular areas are foundations for visualizing a large group of the production functions upon which rational economic decisions in farming must rest. (The limited discussion of catenas and catena keys was disappointing, however, to this reviewer. He has found these keys a very useful aid in organizing a knowledge of soils for economic land appraisals in the humid Northeast.) There are economists who seek with

vision a genuine and intimate knowledge of all major bases for economic decisions in farming. These economists will find the *Manual* a valuable key to a better understanding of one very relevant system of aggregating and classifying a major aspect of land.

HOWARD E. CONKLIN

Cornell University

Migratory Labor in American Agriculture, A Report of the President's Commission on Migratory Labor, Superintendent of Documents, U. S. Government Printing Office, 1951. Pp. 188, \$.75.

The authors have combined observations and hearing testimony taken during the last half of 1950, with such historical data as are available on the subject, into a readable and informative report. The first chapter is introductory and the following 11 chapters treat particular phases of the migratory labor problem. Each of the latter chapters is concluded with some rather specific recommendations for corrective action. These recommendations are made in principle but not in technical detail. It is refreshing to note that the Commission believes that most of the regulation and corrective measures needed can be administered through a coordinated program with existing agencies, fortified with proper state and federal legislation.

It is estimated that of one million migratory laborers in the United States, about 40 per cent are illegal entries from Mexico. If recommendations to prevent this illegal invasion are followed successfully, it seems probable that the competition for the remaining workers will automatically cause farmers to do many of the things subsequently recommended in the report. These include the organization of producers into associations to contract with domestic labor on minimum wages and continuity of employment, furnishing better housing, and improving labor relations generally.

On studying the report, one becomes convinced that the problems of the migrant farm worker are inherent in the system under which he operates. His are not the type of problems that "work themselves out." Nor is he in a political or economic position to work out his own problems. Evidence is presented to indicate that he is not generally a migrant by choice—given an opportunity, he will settle in one place.

The report should be studied carefully by those who have some part in dealing with labor problems, and is good reading for anyone concerned with the welfare of the agricultural industry. The Commission did its work well. It is now up to the Government to implement a program for carrying out the recommendations.

LAUREN H. BROWN

Michigan State College

Index Numbers, Bruce D. Mudgett. New York: John Wiley and Sons, Inc., 1951. Pp. x, 135. \$3.00.

That "few of us *understand* everything about the mechanics of an automobile but most of us drive just the same" is an analogy used by Professor Mudgett to strengthen his relentless plea for the improvement of index number construction. The widespread use of price and quantity indexes by laborers, employers, analysts, and others emphasizes the need for accurate, meaningful index numbers. The uses to which many of our present day indexes are put also expose many of the weaknesses in our present index construction methods.

Professor Mudgett divided his book into two parts. Part I, entitled "The Measurement of Price and Quantity Change," is devoted entirely to a review of methodology. Part II, "Current Construction Methods and Their Shortcomings," outlines the development of the two important Bureau of Labor Statistics' indexes (wholesale and consumers' price), combined with Professor Mudgett's appraisal of the adequacy of the two series.

The author explicitly states the index number problem in Part I. Given the total values of a specified set of commodities in two different periods, what part of the value change was due to a change in price and what part was due to a change in quantity? Immediately, several other problems arise, and each is a potential source of error. What data should be used? Which formula is best? What group of commodities is representative of the population? How can the homogeneity of the commodity groups be preserved between two periods?

In this book, all of these possible sources of error are treated with reasonable detail except the first. The author intentionally ignored the quality of data and made no effort to analyze the possible weaknesses of index numbers due to errors in the observed prices and quantities. Herein lies a weakness of this book, since this area certainly cannot be neglected in any complete coverage of the subject.

In his treatment of formulas, Mudgett concludes that there is no justification for the construction or use of an index number with fixed quantity weights derived from other than the base year(s) or current year. Even in this case, the fixed quantity weights yield an index which is inferior to one with changing weights. The criteria of simplicity, therefore, forms the sole, inadequate excuse for constructing such indexes.

Several tests of formula consistency were explained and the author holds that most of the tests supplement each other in evaluating over-all formula accuracy. The problem of segregating sampling errors is fairly adequately covered and rather precise tests are noted. The tests for homogeneity error, however, are much less precise. The ratio test, which

compares the number of commodities unique to only one of the groups with the total number of commodities in the index, is one having some value in appraising homogeneity error.

Two other methodological points seem worthy of mention. The author takes great care to point out the weaknesses of all methods in comparing price and quantity changes between widely separated situations—separated either by time or space. Index numbers are designed to show directional changes between short periods of time and similar places and he concludes that great caution should be exercised when users deviate from these types of comparisons. The second point is that no consideration is given to monthly indexes and the seasonal problem except to state that the subject is a fertile field for further work. To those of us who have wrestled with this problem, there can be no disagreement with Mudgett's stated view.

The chapters on the indexes of wholesale and consumers' prices provide an excellent review of the development of two widely used and accepted indexes. Primary emphasis is placed upon the evolutionary methodological changes that have taken place in the construction of the indexes. An understanding of the material presented in these chapters is essential to all who use these indexes either for research or business purposes. The final chapter is devoted to the author's appraisal of the two indexes. Here he does a good job of tying together the two parts of the book.

Though many of the theoretical methods and problems of index number construction are covered in this book, it is not intended as a handbook for the constructor of index numbers. Most of the everyday practical problems in making indexes are not covered. Within the framework of its recognized limitations, the book gains a respectable place among index number literature. Almost all of the book is written so that it can be understood by the non-technically trained individual. In addition, economists and economic statisticians should find certain parts of the book stimulating and worth reading. It should prove to be a valuable source of information on what will continue to be an ever-important subject.

L. L. BOGER

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NEWS NOTES

George Alcorn, of the Giannini Foundation, returned from a year's graduate study at Harvard University, where he completed his preliminary doctoral examinations.

E. F. Baumer has been appointed Assistant Professor in the Department of Agricultural Economics, Ohio State University.

Lyle Bender, Extension Farm Management Specialist, South Dakota State Agricultural Extension Service, returned to his position in September after a year's leave in graduate study at Harvard University. He was the holder of a Carnegie fellowship.

Murray R. Benedict, of the University of California, is on leave of absence from September 1, 1951 to June 30, 1952 to serve as director of the Twentieth Century Fund's research, "Analysis of Farm Programs in the United States."

O. P. Blaich has resigned from the Canada Department of Agriculture to take up a position with the British Colonial Service.

J. A. Boan is on leave of absence from the Canada Department of Agriculture while taking graduate work at Ohio State University.

Donald L. Brooke, Associate Economist in the Florida Agricultural Experiment Station, is on leave doing graduate work at the University of Illinois.

Bruce L. Brooks, Extension Marketing Specialist at Montana State College, has been granted leave of absence to attend Purdue University during the second semester for graduate work leading to the Ph.D. degree in Agricultural Economics.

Roy J. Burroughs, Principal Agricultural Economist in the Division of Agricultural Finance of the U. S. Department of Agriculture, has transferred to the Housing and Home Finance Agency in Washington, D.C.

G. L. Burton has resigned as Professor of Agricultural Economics at Macdonald College to take over the management of a ranch in Alberta, Canada.

Ralph Campbell, a Canadian Rhodes Scholar, has returned from Oxford University, and has joined the staff of the Department of Agricultural Economics, Ontario Agricultural College, Guelph, as lecturer.

D. W. Carr, who has been taking graduate work at Harvard University, is on the staff at Macdonald College.

Rober M. Carter, Jr., was appointed Professor of Agricultural Economics at the University of Vermont and State Agricultural College.

J. W. Clarke is on leave of absence from the Canada Department of Agriculture while taking graduate work at Iowa State College.

Elliott S. Clifton, whose special field is Livestock Marketing, has been appointed Assistant Professor in Economics at Iowa State College, effective January 1, 1952.

Edward Dailey has been appointed Assistant Extension Marketing Specialist at South Dakota State College.

Floyd DeLashmutt, Farm Management Extension Specialist at Ohio State University, retired as of December 31, 1951.

M. L. Downen is on leave from the University of Tennessee to continue his graduate studies toward his Ph.D. degree. He has spent one quarter at Pennsylvania State College and is now at Purdue University where he is majoring in Marketing.

M. B. Evans has been appointed Assistant Professor in the Department of Agricultural Economics, Ohio State University.

John Fischer has taken a year's leave of absence from the University of Tennessee to attend the University of Wisconsin. His major field of study is in Marketing of Agricultural Products with emphasis upon Cooperative Marketing.

L. E. Folsom, who recently completed his work for the Master's degree in Business Administration at the University of Chicago, has been appointed Assistant Professor in the Department of Agricultural Economics, Ohio State University.

Jerry Foytik was on leave of absence from the University of California at Davis from June 1, 1951 to January 31, 1952. He accepted a temporary appointment with the Office of Price Stabilization in Washington, D.C., as Branch Economist for fruit and vegetable pricing in the Food Division.

Varden Fuller has returned to the University of California after serving as Executive Secretary and Research Director for the President's Commission on Migratory Labor.

J. P. Gains, Assistant Professor at Mississippi State College, resigned effective November 1, to become Economist with the American Rice Millers Association, New Orleans, Louisiana.

J. R. Greenman resumed his duties as Professor of Agricultural Economics at the University of Florida on September 15, 1951. Professor Greenman served from September, 1950 to September, 1951 with the Economic Cooperation Administration in Europe.

Edgar A. Haff of the University of California is on military leave with the Navy.

Nathan S. Haw, who received his M.S. degree at the University of Minnesota in June, 1951, is Director, Agricultural Department, Minneapolis Chamber of Commerce.

N. H. High, formerly on the staff of the Agricultural Economics Department, Ontario Agricultural College, has accepted the position of full-time director of the two-year Associate Course at the same institution.

Asher Hobson will be on leave the spring semester from the Department of Agricultural Economics, University of Wisconsin. The purpose of this leave, expressed in Professor Hobson's own words, is to "do some organized loafing in Hawaii during those months when Wisconsin's attractive climate is less attractive. The remainder of the time will be spent in practicing the art of being a country squire—not the horse-riding kind, but the pipe-smoking, fence-leaning type."

R. B. Hughes has returned to the University of Tennessee following a year's study toward his Ph.D. degree at the University of Chicago. Mr. Hughes is doing research toward his thesis on the Economics of Farm Enlargements, under a project being sponsored jointly by the University of Tennessee and the University of Chicago.

D. Gale Johnson of the University of Chicago, has accepted a temporary appointment as Visiting Professor of Agricultural Economics at the University of California, Berkeley, for the spring semester, 1952. He will offer courses in Agricultural Policy, replacing Dr. Benedict who is on leave during that semester.

M. M. Kelso, Head of the Department of Agricultural Economics and Rural Sociology, Montana State College, addressed the International Conference on World Land Tenure Problems at the University of Wisconsin in November, on the subject. "National Land Policy and the Development of Agriculture: the American Experience."

Ian Keith, who has been taking graduate work at the University of Minnesota, is now on the staff of the University of Manitoba.

Arnold B. Larson, who received his M.S. degree at the University of Minnesota in June, 1951, has joined the staff of the Department of Agricultural Economics, Colorado State Agricultural and Mechanical College.

Edmond Lebrun was granted leave of absence for the fall semester of 1951 to work in the Office of Price Stabilization, Washington, D.C.

A. W. MacKenzie has been appointed to the staff of the Department of Political Economy of the University of Alberta.

Joe A. Martin has returned to the University of Tennessee following a year's study toward his Ph.D. degree at the University of Minnesota. He is dividing his time between teaching and research. His thesis will be based on a study of the agricultural adjustments associated with the out-migration of farm people from areas remote to industrial centers.

Chester O. McCorkle, Jr., is on military leave from his position as Assistant Specialist in the Experiment Station at the University of California from June 26 until released by the United States Marine Corps.

W. K. McPherson, formerly with Tennessee Valley Authority, is serving as Interim Professor of Agricultural Economics in the College of Agriculture and Interim Agricultural Economist in the Florida Agricultural Experiment Station for the academic year, 1951-52.

George L. Mehren has been promoted as of January 1, 1952 to Professor of Agricultural Economics, Agricultural Economist in the Experiment Station, and Agricultural Economist in the Giannini Foundation at the University of California. Since April, 1951 he has been on leave and is now serving as Assistant Director of the Food and Restaurant Division of the Office of Price Stabilization. He returned to his position as Professor at the University of California in January.

Guy Miller has been granted a two-years' leave of absence from Ohio State University to engage in farm management extension work in Pakistan.

Alexander J. Morin is associate editor of The University of Chicago Press and has been appointed to the staff of the Research Centre in Economic Development and Cultural Change.

Ernest J. Nesius of the Department of Farm Economics, Kentucky Agricultural Experiment Station, has been granted a leave of absence effective November 17 to accept a position with the Economic Cooperation Administration. He will be stationed in Vienna, Austria.

G. A. O'Brien has resigned from the Canada Department of Agriculture to take over a general store business in New Brunswick.

S. T. Rice, Associate Agricultural Economist at the University of Delaware, is now in the Armed Services.

James S. St. Clair, after completing work for the Ph.D. degree at the University of Illinois, has joined the staff of the Agricultural Economics Department of the University of Arizona as Assistant Agricultural Economist.

Raymond E. Seltzer, after a year of graduate study at the University of California, has returned to the University of Arizona as Acting Head of the Department of Agricultural Economics during the absence of Dr. George Barr, who is on a United Nations mission to Chile.

Frank Shefrin, agricultural economist for the Economics Division, Department of Agriculture, Ottawa, has been given leave of absence for two years to

fill an appointment with the Economics Division of FAO in Rome.

Edward J. Smith, formerly of the University of Wisconsin, has been appointed to the staff of the Pennsylvania State College to teach farm finance during the absence of Leonard F. Miller, who will be with the ECA in Paris until June, 1952.

J. B. Smith, Economist on the staff of the Agricultural Economics Division, Ottawa, has resigned to accept a position with the Department of Finance.

R. C. Smith, who has been working on his Ph.D. degree at the University of Illinois, has accepted an appointment as Assistant Agricultural Economist at the University of Delaware.

John H. Southern, formerly with the Bureau of Agricultural Economics, has been appointed Technical Assistant Officer for the Land and Water Use Branch of the Food and Agriculture Organization. Southern has been since July in Rome, Italy, the headquarters of the Organization.

Robert G. F. Spitze has been appointed to the staff of the University of Tennessee. He has completed the requirements for a Ph.D. degree at the University of Wisconsin with the exception of his thesis the subject of which is, "The Significance of the Concept of Economic Power In the Analysis of Agricultural Economic Problems."

The Food Research Institute, Stanford University, has inaugurated a program of graduate studies leading to the degree of Doctor of Philosophy in Agricultural Economics Research. Two or three Research Assistantships will be awarded for 1952-53 to enable promising students to devote full time to pre-doctoral studies in the Institute. Annual stipends will be \$1,500 to \$2,000; the awards are renewable.

Sydney Staniforth, who completed his graduate study at Iowa State College of Agriculture, has been appointed Assistant Professor of Farm Management at the University of Wisconsin.

Clyde E. Stewart received the Ph.D. degree from Iowa State College in December, 1951, in the field of land economics. He is a member of the Division of Land Economics, Bureau of Agricultural Economics, Montana State College.

Oscar C. Stine, Assistant Chief of the Bureau of Agricultural Economics, retired on August 30, 1951, after completing nearly 37 years with the United States Department of Agriculture. Dr. Stine is well-known throughout the United States and the world for his pioneering work in commodity, price, and demand analysis and for his leading role in establishing outlook work in cooperation with the Land Grant Colleges.

In his new status Dr. Stine will give half time to a study of the effectiveness of farm programs sponsored by the Twentieth Century Fund, and the remainder of his time to managing his 120-acre farm at Shepardstown, West Virginia, where he now makes his home.

Harold L. Streetman, Assistant Agricultural Economist at the South Carolina Experiment Station, has been granted leave of absence for graduate work at Ohio State University.

John Tabb, who obtained his M.S. degree at Iowa State College, has been appointed assistant professor at South Dakota State College to replace Philip Van Vlack, on leave of absence for graduate study at Columbia University.

F. R. Taylor, formerly Associate Professor at the University of Rhode Island, was appointed Professor and Head of the Department of Agricultural Economics, succeeding J. L. Tennant, who retired July 1.

J. R. Tedford, after completing his M.S. degree at the University of Connecticut, was appointed Assistant Agricultural Economist at the University of Rhode Island July 1.

J. L. Tennant, former Head of the Department of Agricultural Economics, University of Rhode Island, is serving as Visiting Economist in the Florida Agricultural Experiment Station for the fiscal year beginning July 1, 1951.

James F. Thompson has accepted a position as Assistant in Farm Management with the Kentucky Agricultural Experiment Station effective October 1.

Eric Thor joined the staff of the Department of Agricultural Economics, University of Florida in November as Associate Professor of Agricultural Economics in the College of Agriculture and Associate Agricultural Economist in the Florida Agricultural Experiment Station.

D. M. Thorpe has joined the University of Tennessee staff as an Extension Economist following a year's graduate work at Harvard University.

D. E. Timmons, Extension Economist with the Florida Agricultural Extension Service, University of Florida, has been given leave of absence to work with the Economic Cooperation Administration in Ecuador.

Ralph D. Tompkin joined the staff of the Agricultural Economics Department, South Dakota State College in October, 1951 as Assistant Professor of Agricultural Economics and Assistant Economist.

J. Robert Tompkin, appointed to fill Professor Hopkin's position during the past year, will continue as Assistant Professor in the Department of Agronomy and Agricultural Economics, the University of Wyoming.

Clarence E. Trotter has returned to his teaching and research duties at the Pennsylvania State College after a year of graduate study at the University of Minnesota.

S. W. Wantrup of the University of California has been awarded a Guggenheim Fellowship.

Frederick V. Waugh, formerly with the staff of the President's Council of Economic Advisors, has been appointed Assistant Chief of the Bureau of Agricultural Economics, U. S. Department of Agriculture, to fill the vacancy left by the recent retirement of O. C. Stine.

Fred C. Webster has joined the Staff of the Department of Agricultural Economics at the University of Vermont.

Frank J. Welch, formerly Dean and Director of Mississippi Agricultural Experiment Station, assumed the duties of Dean and Director at the University of Kentucky July 1.

David Weeks has taken a leave of absence from the University of California to serve as Special Consultant to the State Director of the Division of Water Resources, State Department of Public Works.

Moyle W. Williams has returned to North Carolina State College after completing the academic requirements for the Ph.D. degree at Purdue University.

The University of Wisconsin has been host during the recent World Land Tenure Conference to a number of distinguished agricultural economists from foreign countries. Among them were: Sardar Mohammad Akhtar, Head of the Economics Department, Punjab University, Pakistan; Alfred Bonne, Professor of Regional Economics and Sociology, Hebrew University, Israel; M. L. Dantwala, University Reader in Agricultural Economics, University of Bombay, India; Edmundo Flores, Economist, El Colegio de Mexico; Luis Alberto Foulon, Head of the Instituto de Economia Rural, Buenos Aires, Argentina; Euthymios Papageorgiou, Professor of Agricultural Economics and Policy, University of

Salonica, Greece; Kaarlo U. Pihkala, Professor of Agricultural Policy, University of Helsinki, Finland; Manlio Rossi-Doria, Consultant, Sila Land Reform Agency, University of Naples, Italy; Otto Schiller, Director of the Institute of Agricultural Policies, College of Agriculture, Hohenheim near Stuttgart, Germany; Jose E. Velmonte, Dean, College of Business Administration, University of the Philippines.

Members of the Department of Agricultural Economics who handled local arrangements were Raymond J. Penn, Kenneth H. Parsons, and Philip M. Raup.

Lawrence W. Witt, Michigan State College, recently returned from a three-month leave during which time he worked with the Economics Division of the Food and Agriculture Organization of the United Nations in Rome. His specific assignment involved analysis of interrelations between rural and urban prosperity in a number of countries, and study of their degrees of industrial development and correlated levels of farm income.

